

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

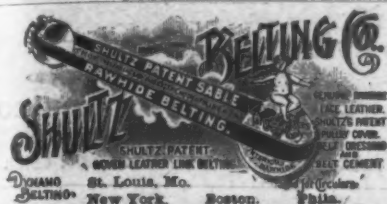
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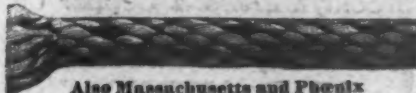
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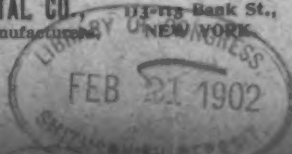
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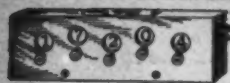
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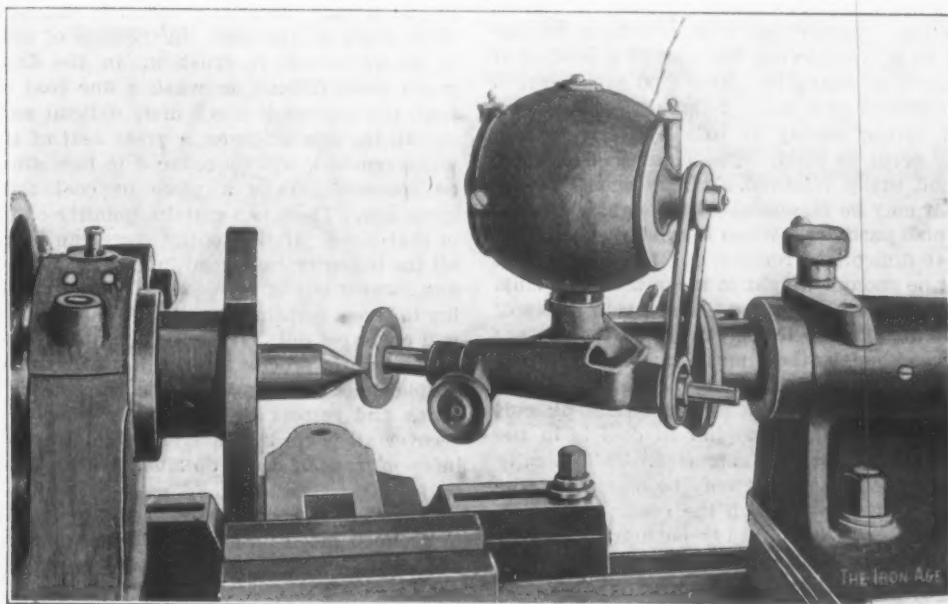
THURSDAY, FEBRUARY 20, 1902

## The Heald Motor and Friction Driven Grinders.

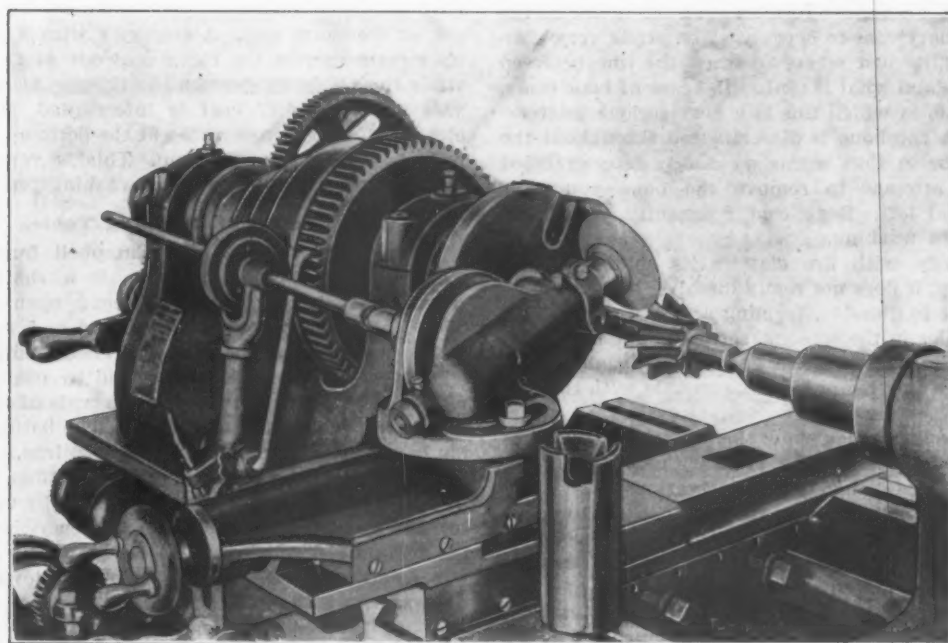
The first machine here illustrated, built by L. S. Heald & Son of Barre, Mass., is intended for grinding lathe centers. It is simply clamped on the tail spindle

frame in two parts so that it can be adjusted to grind any required angle, from 55 to 80 degrees.

The second half-tone shows a power driven machine for use on lathes where it is desirable to obtain power from the lathe itself. A friction roll is mounted on a standard held to the bed of the lathe so as to bear



MOTOR DRIVEN GRINDER.



FRICTION DRIVEN GRINDER.

of the lathe when the grinding wheel is in the proper position for producing the correct angle. The motor is carried by the frame of the attachment and power is transmitted by a round belt running over grooved pulleys. The rotary and sliding bearings are separate, thereby greatly reducing the wear and adding to the durability of the machine. While the machine shown in the engraving grinds only the standard angle of 60 or 55 degrees, as may be preferred, it is also built with the

against the large step of the cone. Power is transmitted through a universal joint and pair of bevel gears to the grinding spindle. Passing through the friction roll is the splined rod of the universal joint, which thus permits the attachment to be used at any desired point on the lathe bed. The grinder may be clamped to the tail spindle or secured to the carriage in place of the regular tool post. It is evident that it may be used at any desired angle and may be attached to any lathe.

## Washing of Bituminous Coals by the Luhrig Process.\*

BY J. V. SCHAEFER OF THE LINK-BELT MACHINERY COMPANY, CHICAGO.

The washing of coal, like the washing of ore, is for the purpose of separating from each other pieces of matter having different specific gravities. In the washing of ore, the ore is the heaviest and sinks to the bottom and the refuse rises and is washed away, while in the washing of coal the contrary is true—the refuse matter is heaviest and sinks to the bottom, while the coal is floated away. The foreign matters or impurities which it is essential to wash out of the coal are slate, sulphur, bone coal and fire clay. The specific gravity of coal is about 1.27 to 1.30. Matter which is materially heavier than this can be separated from the coal by a process of washing. Slate is as heavy as 1.50 or 2.00 even, so it is very readily removed from coal. Sulphur occurs in several different forms, mainly as iron pyrites. As iron pyrites it may occur as solid, dense masses. These are very heavy and easily removed. It may occur also in thin flakes that may be disseminated throughout the entire mass in small particles. When it exists in that form it is somewhat difficult to remove, for the reason that there may not be enough weight to make the lump sink. In that case it cannot be removed. These thin flakes of sulphur I have also known to float away on the surface of the water, although they may have been heavy enough to sink. They may take a cup shape like a piece of tin with the edges bent, and are sometimes difficult to remove. Another form of sulphur in coal is in the form of sulphate of lime and magnesia. This usually occurs in thin white flakes, that may be disseminated—in thin sheets like paper—through the coal. While sulphur in this form is in itself heavy enough to sink, it usually occurs—as you will see it in the Northern Illinois coals—throughout a mass in such parts that it is not sufficient to materially affect the weight of the total mass. Another form is organic sulphur—the worst of all. It cannot be detected by any physical inspection, and it cannot be removed by any physical process.

Bone coal is an impure form of coal. It varies all the way from a slaty coal to a coally slate. It is very difficult to determine just where to draw the line between what is refuse and what is coal in the case of bone coals. There are coals in which this is a very serious matter—coals in which the bone is disseminated throughout the entire mass, or in thin seams so closely interstratified that if you attempt to remove the bone you have very little coal left. Bone coal frequently gives very great trouble in washing.

The difficulty with fire clay is its solubility. (To speak correctly, it does not really dissolve, but it emulsifies.) It is apt to dissolve, forming a sticky mud. This fills up the holes in the screens, settles to the bottom of the tanks and makes trouble generally. So any great quantity of fire clay is apt to make trouble with the machinery.

All of these impurities show themselves in the ashes when the coal is burned. The ordinary coal screenings, as they come to Chicago from the various coal fields tributary to this market, contain as much as 10 to 25 per cent. of ash. These coals can usually be reduced by a process of washing to 5, 10 or 12 per cent. of ash. These same coals contain all the way from part of 1 per cent. to 3 and 4 and possibly 5 per cent. of sulphur. This sulphur can also be partially removed from the coal. In a fuel coal, if the sulphur does not exceed  $1\frac{1}{2}$  per cent. it does not greatly affect the value. If it runs as high as 3 or 4 per cent. it is a very serious matter. The sulphur existing as iron pyrites introduces iron into the ash, which melts with it into a clinker that becomes very hard.

In coking coal the matter of sulphur is of vital importance, for the reason that coke used for melting iron may not exceed 1 per cent. of sulphur, and coke that goes above that is not used in the cupola or blast fur-

nace. If a coking coal contains sulphur it is of vital importance that it be washed out if it can be done.

### What to Do with Impure Coal.

So far I have mentioned these impurities only in their separate state. What is to be done with a piece of coal having refuse matter in it—coal containing a piece of slate or sulphur? What becomes of this piece? If there is enough of the foreign matter attached to the piece of coal to make it heavy enough to sink, it will be rejected; if not, it will go with the coal. Either one of these cases is bad. In the first case a quantity of coal will be lost in the refuse. In the second case we shall be leaving in the coal the very matter which we are trying to get out. One way is to crush the coal and thus free the foreign matter, but there are difficulties in doing that. You all know that in the case of a fuel coal the selling value depreciates very materially with the size, so it would not do to crush all the coal. In the case of coking coal it is of no advantage to crush it. In the first place, it is much more difficult to wash a fine coal than a coarse coal; the process is much more difficult and much slower. In the second place, a great deal of the impurities, when crushed, will be reduced to fine slime and cannot be removed. Take a piece of coal the size of a goose egg. There is a certain quantity of foreign matter in that piece. If that entire piece can be rejected, then all the impurity contained in that coal will be kept once and forever out of the coal. If you crush it, you are going to free a certain quantity of that impurity which you will never get out. The only thing to be done, as is done in the Luhrig process, is to reject every piece that has a suspicion of having foreign matter in it, and then to crush and retreat that primarily rejected product and recover all parts that are of value and use them as an inferior grade of coal. So much for the impurities of the coal.

The appliances that are used for washing coal may be grouped into four general classes: The trough washer, the Campbell bumping table, the Robinson or inverted cone washer, the jig washer.

### Trough Washer.

The trough washer consists of an open end trough set on an incline, with cross riffles in the bottom. The coal is sluiced into the upper end and the water flows out of the lower end. A conveyor with flights running up stream carries the clean coal out at the upper end while the refuse gathers on the riffles. At regular intervals the stream of coal is interrupted, the refuse is cleared off of the cross riffles at the bottom, and then the process is begun over again. This is very crude and hardly deserves to be called a washing process.

### Campbell Bumping Table.

The second form is the Campbell bumping table. This, as I have seen it made, is a shallow wooden trough 30 inches by 6 or 8 feet long, open at the ends. The depth is 8 inches and may be 6 or 5 inches at the ends. It is hung in a slightly inclined position, one end slightly higher than the other, and by means of a cam motion it is thrown, at regular intervals of time, against a bumping post at the upper end. The bottom of the table is formed by a piece of galvanized iron. A couple of inches up from the bottom is a false bottom, with riffles, pointing up hill. The coal is sluiced on by means of water, and as the bumping table is thrown violently against the bumping post the refuse is thrown up hill, off the upper end, while the coal floats off the lower end with the water.

### Robinson Washer.

The third form of washer is the inverted cone or Robinson washer. This consists of a conical steel tank, set vertically. There is a vertical shaft acting through the center. The shaft carries a pair of cross arms at the top, which carry vertical stirring arms. Water is forced in at the bottom and flows out through an opening in the upper edge of the cone. Coal is fed in near the center at the top. The refuse matter gradually settles to the bottom, and is removed at regular intervals by opening valves or slides, while the clean coal flows out at the top with the water.

Both of these forms of washing device fall very

\* Abstract of paper read before the Western Society of Engineers and printed in the *Journal* of the society.



far short of accomplishing perfect results. The Campbell table is too delicate. The entire body of coal under operation at one time does not exceed about 3 inches in thickness. The slightest variation in the relative quantities of coal and water affects the operation. The Robinson washer is quite effective on the coarser sizes, but fails on the finer sizes. Both have been used to some extent for washing coals for fuel, but where requirements have been severe and regard has been had for keeping the coal out of the refuse and making the coal as clean as it is possible to do, each has failed, as in Pennsylvania and Nova Scotia. The only device which seems to lend itself perfectly to the separation of coal, as it has been fully demonstrated to lend itself to the separation of ores, is a jig.

#### Jigs.

A jig is made in a variety of ways and jigs have been designed by a number of people. The jigs usually take the name of the inventor, and there are jigs in this

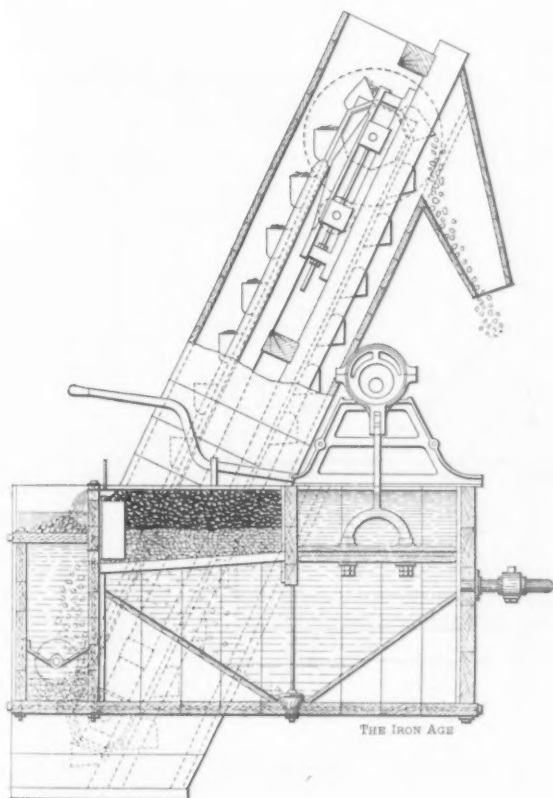


Fig. 1.—Nut Coal Jig.

above the screen plate and through that opening the refuse works its way. The opening is guarded by means of a slide having a hole in it, so that the location of this opening, as well as its size, may be regulated by the operator. The coal issues in two openings on either side of the slate valve. As the refuse works its way out it drops into a compartment in front of the jig, is pulled to the end of this compartment with a screw conveyor, and an elevator lifts the refuse out of the water and disposes of it. You will notice that the refuse lies at the bottom and prevents the screen plate from allowing any of the fine coal that may happen to be small enough to work its way back.

Let us consider the operation of the jig. When we first put the coal into the jig there is no refuse on the bottom. Some of the coal will go directly through the holes at the bottom and be wasted, but after the operation has continued for half an hour or so there will be a layer of refuse at the bottom which will prevent the coal from being wasted. Now if the coal put into that jig is fine—say below  $\frac{1}{2}$  inch—then the refuse contained in that coal is not sufficiently large to make an effective layer of refuse on the plate. It would form too dense a mass. The interstices would not be large enough to allow water and refuse to work through. In order to over-

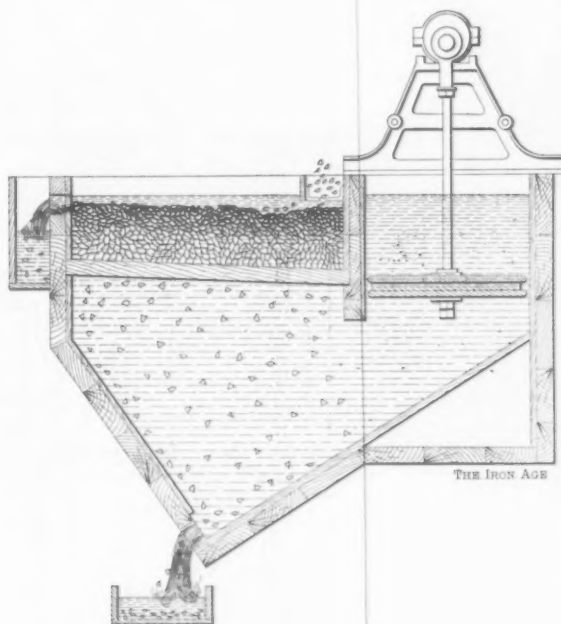


Fig. 2.—Jig for Fine Coal.

#### WASHING OF BITUMINOUS COALS BY THE LUHRIG PROCESS.

country in quite a variety. Some are good, some bad and some indifferent. It would not be worth your while to attempt to describe all of these. I will simply describe the Luhrig. The operation of these jigs differs in detail. The foundation principle at the bottom of all is the same. The Luhrig jig consists of a rectangular box, Fig. 1. If the capacity demands a number of jigs, this box is simply made long enough to be divided by partitions into as many jigs as are required. Each jig is divided by a partition from the top about half way down, dividing the jig box into two compartments—rear and front. In the rear compartment a plunger plays up and down, and water is forced in from beneath the plunger. The front compartment is closed near the bottom by means of a screen plate. Coal is fed in immediately in front of the partition. The water is caused to take a pulsating motion by means of the plunger, and the water forces its way up and down and gradually works forward to the point of issue and effects a separation between the coal and the refuse, so that by the time they have worked forward to the front end of the jig box the refuse is safely in the bottom and the coal at the top. Near the center at the front is an opening immediately

come that point Mr. Luhrig uses a jig much the same shape, the design being a little different, but the principle exactly the same, but he places on top of this screen plate a layer of feldspar crushed to uniform size. This forms a permanent artificial layer of refuse, and as the coal rises with the water the refuse works its way down through the interstices of the feldspar and gets down to the bottom of the jig. That is the feldspar jig as it is used in Luhrig plants, as shown in Fig. 2.

Right at this point I want to warn you against the error, which is quite common, of assuming that a successful jig, or bumping table, or inverted cone assures the success of the washing plant. Nothing, I assure you, could be further from the truth. The machine which actually does the washing is a very small part of the entire plant. Many other parts of the plant are essential to the success of the plant. Let me illustrate:

#### Essentials for Coal Washing.

I will assume that I have plenty of steam pressure and wish to use that steam pressure to drive a mill. I go to a machine shop and say to the proprietor that I have plenty of pressure and need some kind of a machine that will change that static pressure into motion,

and ask what he will charge for a machine to convert my steam pressure into motion. He tells me \$300. Then I go to another machine shop and state the same case. The proprietor says he would like to know a little more about the kind of motion I propose to use, &c. He then states that, without knowing any more about it, he thinks I should have a complete steam engine, which he can make for something like \$1200. I buy the \$300 machine, and when I unload it from the car I find I have received a well designed and well executed steam cylinder. But I do not see how I can use that. I call in the manufacturer and tell him I do not see how I can drive my machinery with that thing. He tells me that is just what I asked for, and that this is a machine for converting my pressure into motion. I tell him that I seem to need something else. He replies, "Of course, I

50 tons per hour, Fig. 3, the other for handling 100 tons per hour. The lantern slides from the design for handling 50 tons were made by tracing off the designs for a plant that was actually built a little over a year ago. Some modifications of this design have been used in a number of plants, so that these designs are not imaginary; they are of plants that are in satisfactory operation. The plant of 100 tons per hour was put in operation a month ago; it was designed and built for the Buckeye Coal & Railway Company of Nelsonville, Ohio. This plant has been running since it was put in, day and night constantly.

I will try, briefly, to follow the coal and refuse through the plant from the point where the coal is received to the point where the coal is delivered into the cars and the refuse is discarded, and in that way I be-

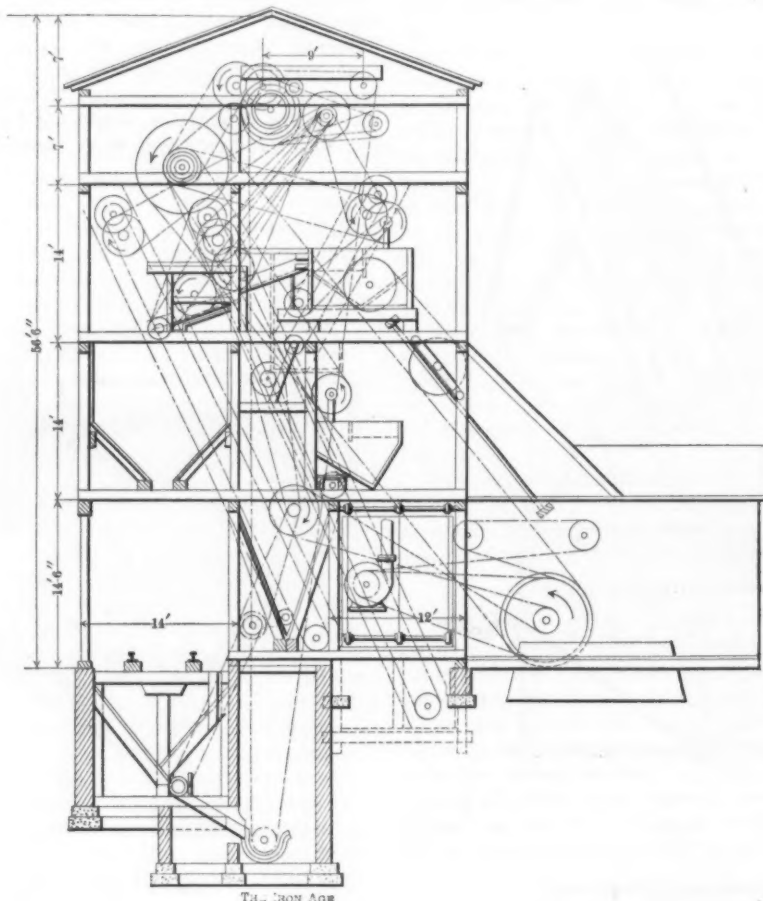


Fig. 3.—Fifty-Ton Plant.

#### WASHING OF BITUMINOUS COALS BY THE LUHRIG PROCESS.

supposed you knew that. In addition you will have to have a shaft, fly wheel, &c., and when you have those pieces all put together and a belt run from your wheel to the line shaft you can then run your mill." I ask what will be the cost. He replies, that will depend on how much money I wish to put into my plant; that I can possibly pick up a second-hand fly wheel somewhere; that the pillow blocks can be gotten from the Link-Belt Machinery Company at moderate cost, and other parts obtained in various places. He also says that his responsibility ends in furnishing the machine for converting pressure into motion, and that it is a good machine.

#### Luhrig Process.

Now, what is the Luhrig process? The Luhrig process is simply this: It is the result of the life long labors of Karl Luhrig among the dirty coals of Germany, added to which is the experience of engineers working with Mr. Luhrig, in treating the dirty coals of Scotland, England, and, in fact, the world around.

I have with me to-night lantern slides showing two designs of Luhrig washers. One design is for handling

lieve you will get more quickly and more thoroughly an idea of the latest and best designs of Luhrig plants as they exist in this country to-day.

This is an end view, Fig. 3, of a 50-ton per hour plant for washing coal for fuel purposes as it is used in Illinois by Donk Bros. Coal & Coke Company of Collinsville, Ill., and by the New Ohio Washed Coal Company, Cartersville, Ill.

The coal is received on the track shown, and is dumped into the pit under the track, if they have dump cars; if they do not have dump cars then an unloading machine is put over this track. In either case the coal comes into this pit. From there it is delivered into an elevator which lifts the coal once and for all into the top of the building. At the top of the building is a triple jacketed screen which divides the coal primarily into two classes: 1, The nut coals Nos. 1, 2 and 3; 2, the fine coal passing through the  $\frac{3}{4}$ -inch holes. The nut coals from the three ends of the triple jacketed screen are dropped into their respective chutes. When washed, the clean nut coal is sluiced out of the front of the jig.



with the stream of water which floats it there, and falls upon the bumping screen, which is simply a wooden frame carrying a screen plate on the bottom. The coal is sluiced onto the bumping screen at the upper end with the stream of water. That gradually shakes the coal off the lower end and gives the water plenty of time to escape. The coal at this point falls directly into the shipping bins over the track. The refuse (from the nut coal) in the meantime has been taken out of the water by the elevator. The fine coal, in the meantime, passing through the outer jacket, is met by all the water which has been gathered by the sluice box under the bumping screen. The water sluices the coal into the grading box, which is a V-shaped tank. The water flows in at one end in a horizontal direction. As the water flows across and mingles with the body of water in the tank the velocity diminishes, so that in this grading box the coal simply settles gradually; the largest first and the finest later on. Each fine coal jig gets a different size of coal.

forations of the sludge elevator buckets escapes into the tank. The stream of water flows very slowly in this tank, so the velocity of the water is very low. As the fine coal settles to the bottom the conveyor, which is a triple line of chain carrying scrapers moving very slowly, scrapes the sludge to the end, drops it into the elevator, and the elevator takes it out. The suction of the pump is at the other end. All the coal which will settle at all will be deposited and taken out, and the water taken on through the plant and used over and over. The only water that is lost is that which goes away with the wet coal. The only additional water that is needed is supplied as a spray over the bumping screens. A stream of clear, fresh water is directed on the coal just before it falls into the bins, and all the dirty water is rinsed off.

#### One Hundred-Ton Plant.

Figs. 5 and 6 are views of the plant having a capacity of 100 tons per hour which has been recently started

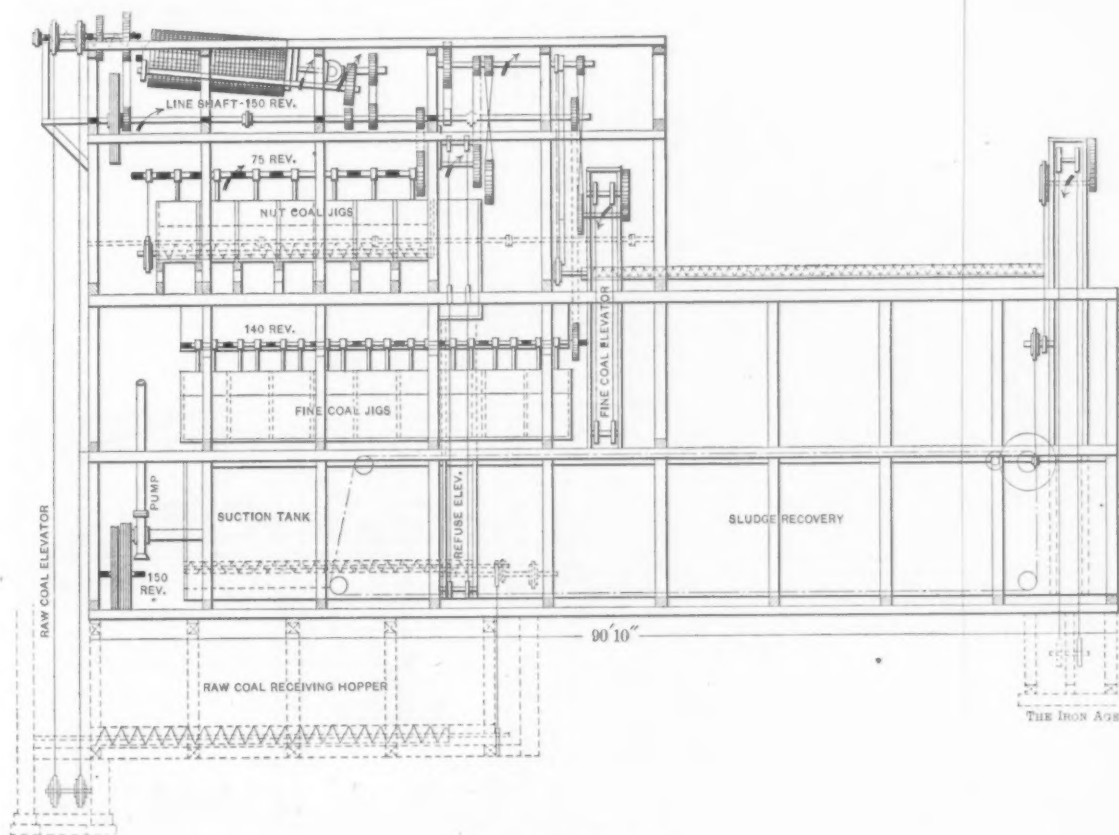


Fig. 4.—Fifty-Ton Plant.

#### WASHING OF BITUMINOUS COALS BY THE LUHRIG PROCESS.

The eccentrics are adjustable for their stroke to suit the size of coal to be treated. The fine coals, although they are separated into sizes hydraulically in washing, are all mixed again and are sluiced into the fine coal elevator. The water, which has been drained from the coal by the elevator which lifts the fine coal into its bin, is all gathered together in the sludge tank. The refuse matter, which has been discharged from the bottom of the nut coal jigs and from the bottom of the fine coal jigs, with the water which is used to sluice it out of these jigs, goes into the refuse recovery. This is a V-shaped tank with a screw conveyor in the bottom and an elevator in one end. The entire plant is driven from the engine in the engine house at one side of the building by means of rope transmission. The water in the sludge recovery tank is usually 8 feet deep.

The sludge tank occupies nearly the entire length of the building, 75 feet long. The tank is made water tight, with a conveyor from end to end, and at one end a pit is built onto it. In that pit an elevator is placed. The water which has been used throughout the entire plant is all sluiced together directly into this sludge elevator. Such portion of the coal as goes through the per-

by the Buckeye Coal & Railway Company. The description of this plant is almost identical with that of the plant I have just given. It has some special features. The capacity of the plant was such that we had to double the screening capacity, and we have a pair of triple jacketed screens. Every pound of coal has to be unloaded at the plant. An elevator lifts it to the top and it goes on down through the process. The power house in this case was made separate from the rest of the plant. The fuel for this plant is taken from the fine coal bins at one end by means of a conveyor. Fuel in most of these plants is taken from the very fine coal. The No. 5 is what they intend to burn. It is the coal that goes through the  $\frac{1}{4}$ -inch holes that they use for fuel. You will see that this is almost a duplicate of the other plant. In this case a little different arrangement is made of the fine coal. The fine coal is sluiced to a draining screen before going to the fine coal elevator, and so another size of coal is made. The fine is what escapes through the openings in that screen, and the other size is what passes from the end of that screen.

Before going any further I wish to inquire if any one desires to ask any question.

**Discussion.**

W. R. Roberts: Do you mix the different sizes after they have been once separated, or are they marketed in different sizes after separating?

Mr. Schaefer: They are marketed in different sizes. People are used to getting mixed sizes and sometimes ask for them, but they are not desirable nor economical. To get the most value out of a fuel it is better to have it uniform size. If you look into a furnace where coal is burning, when a uniform size is used, you will see that it lies in a uniform bed, and you get a better draft and more complete combustion. A fine coal alone is better than a fine coal mixed with coarse coal.

	Before washing.			After washing.		
	Ash.	phur.	Fixed carbon.	Ash.	phur.	Fixed carbon.
Belt Mountain, Montana	18.74	3.34	43.72	5.56	2.40	48.39
Wellington Colliery Company, Vancouver Island	35.00	...	38.00	8.90	...	56.90
Alexandria Coal Company, Crabtree, Pa.	10.60	1.30	...	6.21	0.61	...
De Soto, Illinois	18.00	...	44.00	4.20	...	57.00
Northwestern Improvement Company, Roslyn, Wash.	16.30	0.57	45.90	9.70	0.40	47.86
Luhrig Coal Company, Zaleski, Ohio	15.80	1.90	...	8.00	0.87	50.90
Rocky Fork Coal Company, Red Lodge, Mont.	25.30	...	37.80	8.50	...	47.20

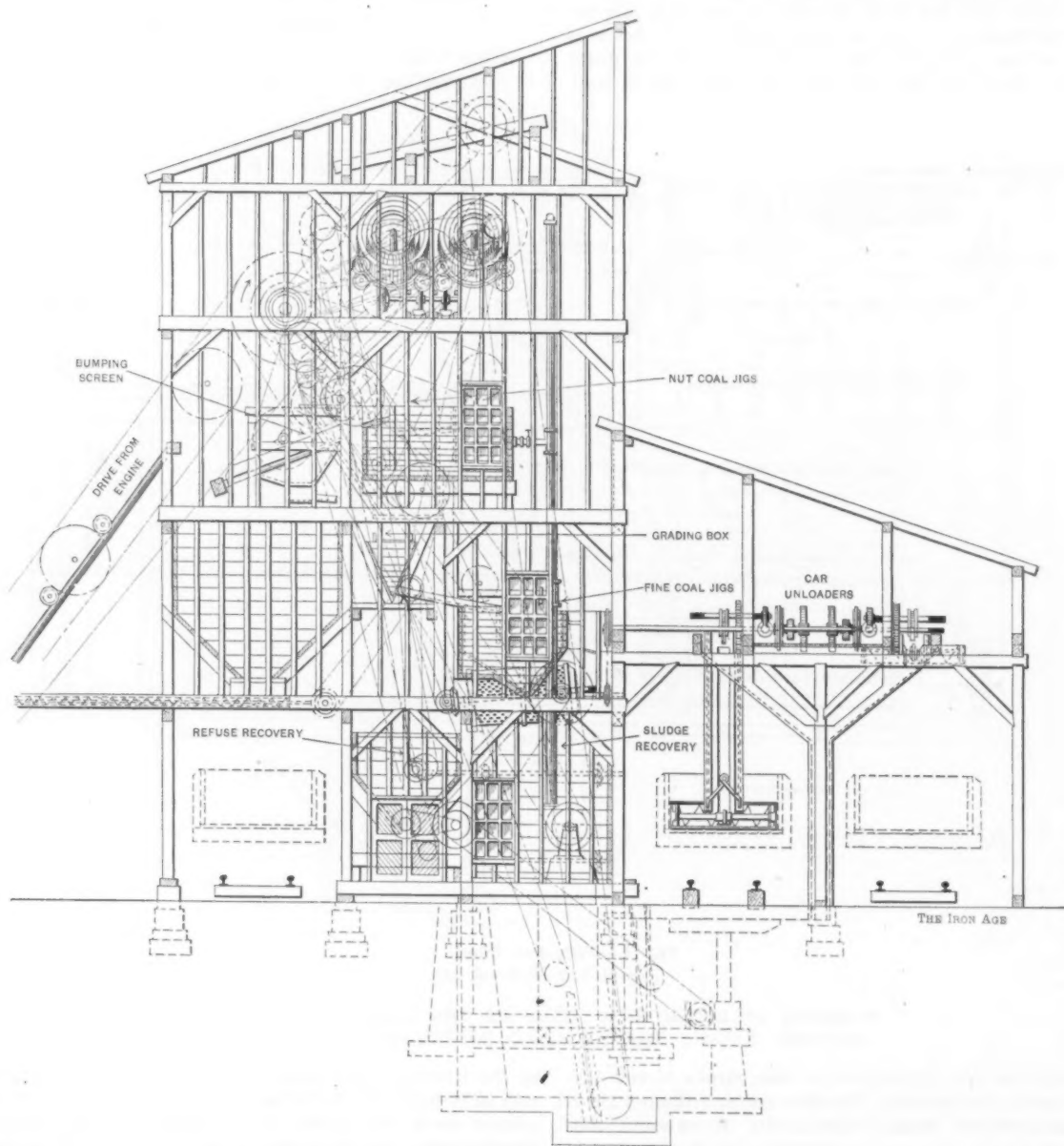


Fig. 5.—One Hundred-Ton Plant.

#### WASHING OF BITUMINOUS COALS BY THE LUHRIG PROCESS.

Most of the Luhrig washed coal that is sold is in five sizes:

Size No. 1 goes through a 2½-inch hole and over a 1½-inch hole.  
 " " 2 " " 1½ " " " " 1 " "  
 " " 3 " " 1 " " " " ¾ " "  
 " " 4 " " ¾ " " " " ½ " "  
 " " 5 " " ½-inch hole.

The latter is the fine coal.

Mr. Roberts: My question is, taking any particular grade or kind of coal, what is the relative efficiency of that for fuel purposes after the washing and before?

Mr. Schaefer: I will answer that question by the following list of Luhrig plants, showing analyses of coals treated in these plants both before and after washing:

Buckeye Coal & Railway Company, Nelsonville, Ohio	13.77	1.05	49.04	4.30	0.89	54.82
New Ohio Washed Coal Company, Cartersville, Ill.	9.48	0.78	55.00	4.85	0.69	63.00

These, I think, will answer Mr. Roberts' question.

Mr. Roberts: That suggests another question—viz., whether this coal washing applies to all kinds of coals, or bituminous coal only, or some particular grade of bituminous?

Mr. Schaefer: Nothing I have said to-night applies to anthracite coal; only to bituminous.

Mr. Finley: I would like to ask Mr. Schaefer if the



cost of coal is enhanced where the ash is reduced (say) one-half by washing.

Mr. Schaefer: It enhances the cost of the coal in two ways: 1, In the actual cost of running the plant. That is a quantity which varies with the constancy with which the plant is operated. In one case in Pennsylvania, where they ran a plant day and night, for a long period of time, not interrupted by strikes, six days in the week from Monday morning to Saturday night, 1600 tons every day, their cost of washing, including repairs, fuel, oil and labor, was 3 cents a ton; 2, in the refuse matter rejected. You are losing that quantity. You have to count that into the cost of washing. That usually amounts to approximately the reduction in ash.

These two elements make up the cost of washing.

Professor Kerr: I would like to ask what effect the washing has on the coal.

Mr. Schaefer: The evaporative power of the pure coal is very little affected by going through the washing process. The coal does not actually absorb moisture, and if it is thoroughly drained it is not affected.

In shipping coal by the carload it is customary in some places, where the distance shipped is not great, so

### The Tunner Memorial.

An international committee, including many of the leading metallurgists of Great Britain and Europe, having as its representative American member Prof. H. M. Howe of Columbia University, New York, has been formed for the purpose of erecting at Leoben, in the Austrian province of Styria, a suitable memorial of the late Peter Ritter von Tunner, whose intelligent, foreseeing and devoted labors throughout a long life not only established at the place now indissolubly associated with his name a famous center of technical instruction and training, but also contributed in no small degree through his own investigations, criticisms, reports and recommendations to the rapid progress of the scientific metallurgy of iron and steel which has wrought a wondrous and beneficent industrial revolution in the modern world.

In the triumphant result of such a revolution it is well to remember the pioneers to whom its inauguration and encouragement were due.

Tunner's merits in this respect were long ago recognized. Born relatively the obscure son of a simple pro-

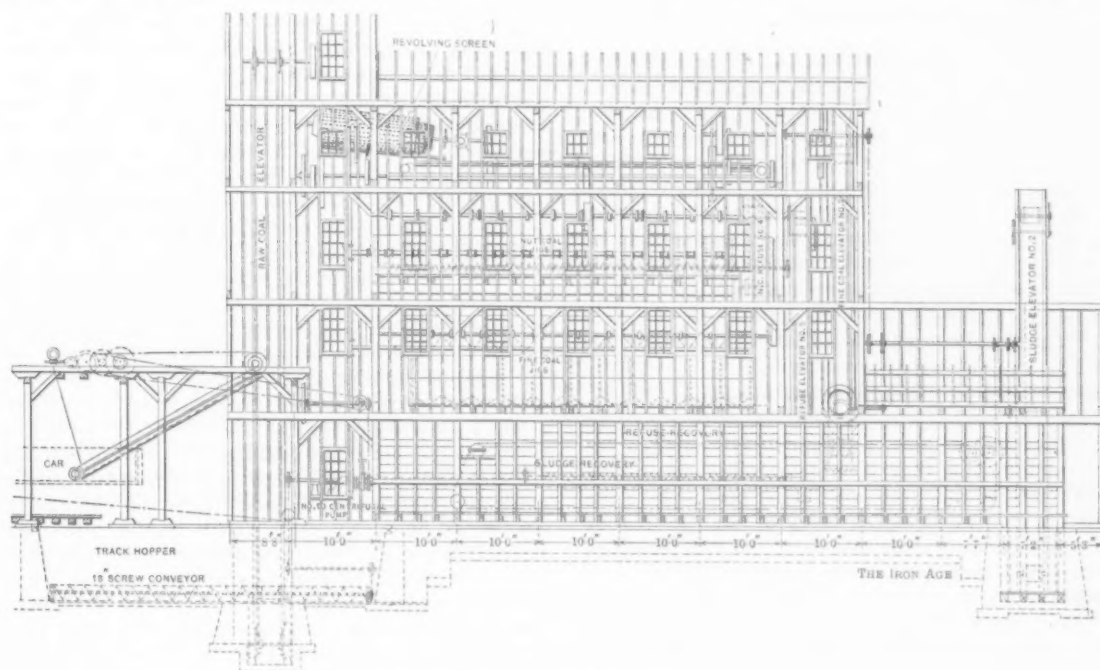


Fig. 6.—One Hundred-Ton Plant.

### WASHING OF BITUMINOUS COALS BY THE LUHRIG PROCESS.

the coal comes pretty fresh from the washing, to allow a certain number of pounds per car for water.

Professor Kerr: About how much water would there be per car?

Mr. Schaefer: There would probably be in a car of wet coal—a 30-ton car—a ton of water. That is free water on the outside. The coal would not absorb the water, and within a day or two this water will all have drained off.

**Abolishing the Mill Committee.**—According to Theodore Shaffer, president of the Amalgamated Association, a recommendation will be made at the annual convention of the organization, in Wheeling, W. Va., in May, for the total abolition of the "Mill Committee." The Mill Committee is the mill representation of unionism and settles all disputes between the men and the officials, unless they are so serious that a general strike is ordered. It has been claimed that where members of this Mill Committee are biased or inclined to be unjust they can cause no end of trouble to the manufacturers and keep the mill in a state of disorder all the time. The plan is to substitute for this committee a salaried district official, who is to go to all mills and settle all disputes as the representative of the men. This change will be one of the most radical that the Amalgamated Association has ever attempted.

vincial forge master, and making his way by his own labors, he died loaded with decorations and honors, bestowed not only by sovereigns, but (still more significantly) through the unsought appreciation of professional and scientific associations, such as the Iron and Steel Institute, which bestowed upon him the Bessemer gold medal, and the American Institute of Mining Engineers, which made him, many years ago, one of its few honorary members. The "Biographical Notice of Peter Ritter von Tunner," contributed by Dr. Raymond, secretary of that Institute, and published in Vol. XXVII of its transactions, amply justifies the desire of his former pupils and colleagues to perpetuate his well earned fame. We understand that subscriptions for this purpose may be sent to Dr. R. W. Raymond, Box 223, New York City, who has consented to act for Professor Howe as treasurer of the American contributions to the international committee. Such contributions, we think, ought to be, and we hope they will be, both numerous and liberal.

Under date of February 11 the Board of General Appraisers have decided that furnace sand is entitled to entry free of duty. The case was brought up through a protest of Dana & Co. of New York against a decision of the Collector of Customs at Boston, Mass.

## The Eight-Hour Bill.

### Iron Interests Testify Before the House Committee on Labor.

WASHINGTON, D. C., February 18, 1902.—The formal hearings given by the House Committee on Labor on the pending eight-hour bill were opened on the 13th inst. with an argument against the measure presented by Archibald Johnston, general superintendent of the Bethlehem Steel Company, who devoted several hours to an exhaustive and technical statement of the reasons why the proposed measure would prove wholly impracticable as applied to the methods of manufacturers of iron and steel on a large scale. There were present at the meeting a number of representatives of well-known manufacturers, including ex-Secretary H. A. Herbert of the Midvale Steel Company, the Union Iron works, Bath Iron Works, &c.; Jas. H. Hayden and Ormsby McCammon of the Bethlehem Steel Company, the Carnegie Steel Company, &c., and General Williams and Carroll S. Smith of the Cramp Shipbuilding Company. The labor organizations were represented by a delegation headed by Samuel Gompers, president of the American Federation of Labor.

Mr. Johnston's statement was a straightforward, eminently practical *résumé* of the reasons why large iron and steel plants cannot be conducted on an eight-hour basis except at a heavy loss, both in efficiency and economy. He did not content himself with generalities, but presented specific illustrations in such numbers as to leave no doubt as to the correctness of his position. Throughout his argument he was cross examined at intervals by Mr. Gompers and other members of the labor delegation present, but his knowledge of details gained as a practical mechanic enabled him to sustain his points very effectively, to the evident chagrin of his questioners.

#### The Testimony of Archibald Johnston.

Mr. Johnston began with the statement that he had been in the service of the Bethlehem Steel Company for 17 years, and during that time had been engaged in many branches of the iron and steel business. "We are," said he, "large manufacturers of high grades of iron and steel, and of intricate forgings and castings in both iron and steel for the Government and for outside parties, about one-third of our work being for the Government. We make the largest castings in iron and steel made not only in this country, but in the world. We also make special steel in large and small quantities, and it is a fact that even in the manufacture of these small quantities of special steels this measure would prove impracticable, for oftentimes the heats could not be so arranged as to be completed inside of eight hours. It is customary and practically necessary that the man who has charge of melting should complete the operation, as on one man only can the responsibility for the success or failure of the product be placed. Such responsibility cannot possibly be divided. The time required to melt a certain quantity of high grade steel is variable and cannot be definitely controlled. This being the case, a strict application of an eight-hour day would, of necessity, cause heats to be started by one person and turned over to another. If this were practicable in the manufacture of high grades of steel it would have been done long before now. It is, however, absolutely essential, and therefore customary, for a melter to complete his own melts. Heats of special steels are made of special compositions, requiring exact proportions of the rarer metals to produce, as the case may be, toughness, or toughness combined with hardness, to be used possibly to withstand a constant jar or a high heat developed by the friction of cutting, &c. Heats for special uses require greater care and a longer time to manufacture than those of ordinary steel, and after certain stages in their manufacture have been reached the work must be completed by some one man highly skilled in the art.

"It might be said, perhaps, that more men could be educated to do this class of work. The answer is that a

constantly increasing number of men are being educated, but this does not correct the difficulty, for heats are bound to lap over the eight-hour limit, no matter what judgment is exercised in handling them, and the man best able to complete a heat is naturally the one who from its inception has noted carefully all the various steps and changes as compared with other heats, and who is therefore familiar with the task in hand and best able to cope with the inherent difficulties that arise during its successive stages. No man can transmit in conversation the refinements of detail arising in the manufacture of heats of high grade steel to another any more than one man can clearly and completely convey to another all the workings of his brain by a letter. Certain grades of steel can be melted much more rapidly than others; some in four hours, while others of higher qualities require 10 or 12 hours or even more. Heats composed of large proportions of foreign metals or alloys require more time than others not so composed. Again, certain grades of steel are required to be held after melting, but before pouring, for a short time, while others require to be held a longer period, depending upon the uses to which they are to be put, in order to attain certain desired composition by a thorough mixture of the ingredients or for the escape of gases. For these reasons more than eight hours are frequently required to be consumed continuously in the manufacture of many grades of steel, even though the resultant weight produced may be only 120 pounds of crucible steel on the one hand or 50 tons of open hearth steel on the other. I have seen heats of crucible steel up to 60 tons poured into one ingot the manipulation of which required the constant services of 1500 to 1800 men for a period of 10 to 12 hours.

"But there are other important reasons of special significance to the workman himself why the man who starts a heat should complete it. On this basis only can a man working on a poundage or tonnage basis receive full compensation of credit for the quality of his work. This consideration cannot be measured in dollars, for a man's promotion and the success of his entire career must depend upon the results of operations which he initiates and carries through to a successful conclusion. The strict enforcement, therefore, of the eight-hour system would unquestionably result in the production of much inferior product, and therefore of loss of trade to employers and of earnings to the men employed.

"In this day of specialties most of the work obtained by the great concerns in this country at good prices is secured because of their ability to fill orders for special work which cannot be filled by the ordinary run of producers. Any firm can produce material within large ranges of composition as to carbon, sulphur, &c., but only a few of the most experienced firms can produce material of high standard meeting the requirements and specifications upon which the reputation of the great engineers of this country is so largely founded. The fact that we are able to produce steels within narrow limits of composition which will show greater strength and more enduring qualities than the ordinary grades of steel gives to the firm an enviable reputation, and enables them to secure larger prices for the material desired, which has a very beneficial effect upon the wage earner. American ingenuity is at a higher premium than that of any other country. Where else in the world is labor so well paid as in the great concerns in this State? Where else in the world do the laboring classes own their own homes, procured as a result of their individual efforts and industry? Where else today can be seen so much prosperity and so little misery?

#### Making Large Castings.

"I have undertaken to show why more than eight hours are required in the production of small quantities of high grade steel, and it will perhaps be more readily understood why a longer period of continuous labor is more important when the mass involved runs up to hundreds of thousands of pounds and involves thousands of dollars. These facts are so self evident to the practical men who have had experience along these lines that they hardly know where to start to explain



the manifold difficulties. To a man charged with all the details of making a steel or iron casting weighing, say, 250,000 or 350,000 pounds, and valued at from \$20,000 to \$50,000, it would seem preposterous to say he should work no more than eight hours. This is equivalent, gentlemen, to saying you shall not make the casting, and why? Simply because you are making high grade work for the Government. The enforcement of a law of this kind simply amounts to saying that the work cannot be done by you—it must be done by some firm allowed to work more than eight hours.

"In the production of such large masses of iron and steel the guiding hand of some man having a great deal of practical information as well as executive ability must necessarily be felt, and more often 12 to 18 hours are consumed in the production of castings entering into some of our largest labor saving machinery. Are we to do without these marvels of American engineering skill simply because they require more than 8 or 10 or even 18 hours for their production? Does American judgment say yes to such a proposition? I do not believe it.

"Owing to an accident to our pumping machinery I have personally, gentlemen, stood at a forging press from 7 a.m. until 4.30 p.m. forging on the last heat of a field ring for the Niagara Power Company, and our experience has taught us that whoever starts a heat should finish it. Ordinarily these heats are of shorter duration, but, nevertheless, many instances arise where it is necessary for a man or a set of men to work for more than eight hours consecutively. In this connection I might mention the Ferris shaft, weighing 90,000 pounds, 43½ feet in length and 32 inches outside diameter, with an inside diameter of 15 inches, forged from an ingot weighing 130,000 pounds; and a 16-inch jacket, weighing 84,532 pounds, 25½ feet in length and 45 inches outside diameter, forged from an ingot of 250,000 pounds. Other large jobs might be mentioned in which ingots were used weighing as much as 350,000 pounds, all of which illustrates the impossibility of meeting the conditions laid down in this bill.

"Now there is another phase of this subject, and in this connection I cannot too forcibly call your attention to the fact that should this bill pass many of the best producing concerns in the iron and steel industry will be very badly handicapped. In fact, it will be practically impossible for them to operate. As is well known, most of the great mechanical achievements of the present time are accomplished in this country in a far shorter time than anywhere else in the world. Can this be done with an eight-hour limit on the hours of work? The achievement of any great engineering enterprise necessitates, of course, procuring the required materials in the least possible time, and as a result contracts and subcontracts are made from one person to another in all parts of the world; in short, the person who can deliver the goods in the shortest possible time often receives the contract regardless of the price. As an instance of the impossibility of limiting the hours of labor as is proposed I might call attention to the fact that the very iron that is necessary to produce the guns and armor for the Government, as well as other grades of high class material manufactured for special purposes, is often made from ores and raw material secured, as it were, from the ends of the earth. Ores especially low in phosphorus and sulphur are procured in many instances in Africa, Spain, Cuba, the island of Elba and other foreign parts. The necessity of procuring materials from such great distances is due to the requirement regarding special compositions. If such materials in the desired compositions could be procured in our own land they could be obtained in much less time and at much less cost, and would certainly be used. Now explain to me if you can how we can guarantee that the ore purchased in Africa or Cuba or Spain or Italy has been handled by men who worked eight hours per day and no more? It is preposterous on its face.

"Again, after the receipt of the ore it must be transferred to the blast furnaces, but here, it will be noted, that the same men who load this material for the production of special grades of iron also load the material

for other furnaces manufacturing other grades. Would not the bill apply to all these men? It is also to be borne in mind that even with the utmost care when we endeavor to manufacture a certain grade of pig iron the desired end is not always achieved, for the result is often beyond the control of those engaged in the work. For example, should we endeavor to produce a high grade of pig iron especially low in phosphorus and sulphur for Government work, circumstances might arise which would give us quite a different composition from what was aimed at. Now it must be borne in mind, of course, that for Government work all of the material must be handled by shifts working not more than eight hours, but if a lot of pig iron of exactly the proper composition for Government work should happen to be produced by a shift working on commercial orders more than eight hours that material could not be transferred to the Government's use because it would be barred by this bill. With such difficulties in the way and with the probability of such extensive and costly delays it would be practically impossible for concerns to meet the demands of the contractors, to say nothing of the resultant expense.

"In view of the conditions which prevail in our plants I feel confident that our men would object very seriously to the operation of this bill. In order to meet the keen competition of the times we have in use what is known as a bonus system. It was established with a view of turning out work in a given time while materially increasing the pay of the men per hour. As is always the case when anything new is introduced, the men at first objected to the adoption of the system, but now they object even more strongly to working by the day, or to having the number of working hours limited. The men never object to the hours of work, but often request to be allowed to work overtime, and never refuse to work more than ten hours when asked. I feel certain they would resent as a curtailment of their personal liberty an attempt to shorten their hours and reduce their earnings. I know that when our ordinary outside laboring work becomes scarce these men object seriously to having the number of hours cut from ten to eight.

#### The Bonus System.

"A few words as to our bonus system will be of interest. A stated amount of work is given to be performed in ten hours and if performed a premium is paid in excess of the fixed rate per hour, although if not performed the fixed rate per hour is nevertheless always paid. The amount of work to be performed in the fixed period is based upon a large number of observations and practical experience, from which we determined the amount of work a good workman could perform continuously. This amount was then reduced 15 or 20 per cent. in order to obtain the amount an average man could do, thereby enabling the average man to obtain the bonus. As an illustration we may take the case of a man earning 20 cents per hour, who, if he works ten hours, whether he accomplishes the task set for him or not, will receive \$2. If he does accomplish this task in just ten hours he receives a bonus of 40 cents, or 20 per cent. of his day's wages. If he accomplishes this work in nine hours and keeps on working for the tenth hour he receives his bonus of 40 cents and 10 cents additional, amounting to \$2.50, but if he accomplishes the work in seven hours and keeps on working at the same rate until the tenth hour he will receive his bonus of 40 cents and 30 cents additional, making a total of \$2.70 for his day's wages.

"This arrangement has worked very satisfactorily, both to the men and to the company, for it has enabled us to get the work out more quickly and to add to the producing capacity of our invested capital; while for the men it has been a great benefit, as we have many instances of employees who have bought homes for themselves principally from their extra earnings on the bonus system and from overtime work. The system has been a stronger incentive to industry than any other plan we have been able to put into effect at our plant. As a result of the good pay our industrious men become better citizens—more intelligent and of a much superior class—and rear better families, giving their children

good educations and becoming highly respected in the communities in which they reside.

#### Continuous Finishing Cuts.

"What I have said heretofore about the practical difficulties has related chiefly to casting and forging, but there is another class of our work in which we would be greatly hampered by the pending bill. We manufacture guns of various classes, some of which we deliver completed, while others we carry along to a certain stage and then turn them over to the United States Government to be finished and assembled. Now this work requires great accuracy in the measurements, and it is a well-known fact that the measurements of no two men agree absolutely. On this Government work the inspectors insist that we shall work to thousandths of an inch, although on most commercial work if we get within a hundredth of an inch we are close enough. Now the measurements of different men disagree so much that what would be 15 inches to you, for example, I might call 15.003, while another man measuring the same piece with the same instrument would call the dimension 15 inches minus 0.003, each one of us being certain that his measurement was correct. This is accounted for in large part by the difference in delicacy of touch of different people. It seems ridiculous, but it is nevertheless a fact that the temperature of the hand can so affect a micrometer caliper as to make a difference of 0.005 or 0.006 in a measurement of the same piece by different people. We are well aware of the difference in temperature of the hands of people with whom we come in contact. As a result of this in order to standardize our measurement we are compelled to maintain the temperature of our machine shop where this particular work is carried on at 76 degrees, and the inspection is so rigid that the Government inspectors will not measure parts of guns for assemblage when the temperature of a shop varies more than eight degrees above or below this point. For this same reason the person who starts a cut for a shrinkage surface must finish it regardless of the time consumed in so doing. It is well understood, of course, that all cuts cannot be completed within eight hours, and it is equally well understood that we cannot afford in these times of severe competition to allow our machines to lie idle in order that eight-hour periods may be attained for accomplishing each particular operation, even though eight hours would be sufficient to finish the operation. An interrupted cut can easily be detected by delicate measuring instruments on gun tubes or hoops, or other pieces of work where accuracy of dimensions is the chief object sought. This is owing to the fact that the pieces cool off and the tool used in doing the cutting also cools off, and when the tool is started again the point at which the cut was interrupted can easily be determined. It is therefore necessary that a finishing cut should be completed without interruption; hence for these guns the very best of steel is used and the final cut is made as light as possible in order that the tool may stand or last until the end of the cut."

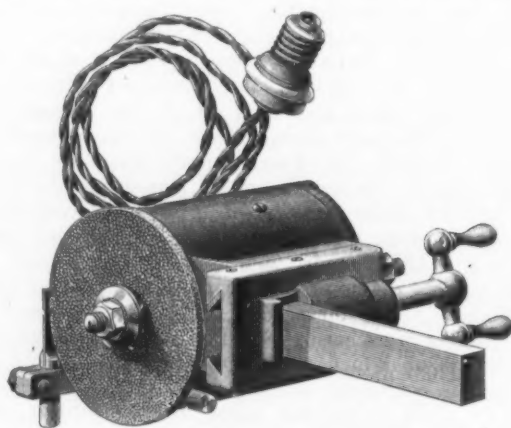
Mr. Johnston gave several other illustrations of the difficulties to be encountered in the endeavor to operate a big steel plant on an eight-hour basis. He cited the work of heating and tempering guns, armor plate and other large masses of steel, and emphasized the enormous loss that might at any time be caused through turning over such work from one shift of men to another. On these points he was sharply cross examined by Mr. Gompers, who endeavored to show that Mr. Corey of the Carnegie Steel Company, and Mr. Linderman of the Bethlehem Steel Company, as well as Mr. Harrah of the Midvale Steel Company, had given it as their judgment that all the mechanical difficulties in the way of the adoption of the eight-hour day could be easily overcome. Mr. Johnson challenged Mr. Gompers to produce the statements referred to, and the latter, after spending nearly an hour in examining the printed testimony taken in previous Congresses, was unable to find nothing relevant to the points referred to. Mr. Johnston stated that he had a very high regard for all three of the gentlemen referred to, but intimated that he would not take issue with them until confronted with their exact language. The most significant statement that

Mr. Gompers succeeded in producing was a declaration made by Mr. Harrah in characteristically sanguine style to the effect that in all his business career he had never permitted himself to be daunted by an obstacle of any kind, and that if forced to put his works on an eight-hour basis he hoped to be able to evolve some plan of doing so, although he confessed he had no notion of how it could be done.

The hearings will continue next Thursday, when a number of witnesses prominently identified with the iron and steel business will be heard. W. L. C.

#### The Hisey Electrically Driven Grinder.

All parts pertaining to the motor of the grinder built by the Hisey-Wolf Machine Company of Cincinnati are encased in a shell, making it dust proof. The bearings are provided with dust proof caps, and are adjustable for wear by means of a nut on the rear end of the spindle. The V-slide has a 2-inch movement, and is fitted with gib to take up wear. The shank, by means of which the grinder may be held in the ordinary tool post, is held in position by a screw, so that shanks of dif-



THE HISEY ELECTRICALLY DRIVEN GRINDER.

ferent sizes may be used. The motor is wound for a 110-volt direct current and runs about 5000 turns per minute.

#### A Consolidation and Outside Competition.

The following statement bearing on the general attitude of a modern consolidation to outside competition was made at the recent meeting of the National Biscuit Company by A. W. Green, chairman of the Board of Directors:

When the company started they were an aggregation of plants. They are now an organized business. When we look back through the four years we find that a radical change has been wrought in our methods of business. In the past, the managers of large industrial corporations have thought it necessary, for success, to control or to eliminate competition. So, when this company started, it was believed that we must control competition, and that to do this we must either fight competition or buy it. The first meant a ruinous war of prices and great loss of profits, the second constantly increasing capitalization. Experience soon proved to us that, instead of bringing success, either of these courses, if persevered in, must bring disaster. This led us to reflect whether it was necessary to control competition. We asked ourselves whether this company, to succeed, must not be managed like any other large mercantile business. We soon satisfied ourselves that within the company themselves we must look for success.

We turned our attention and bent our energies to improving the internal management of our own business, to getting the full benefit from purchasing our raw materials in large quantities, to economize the expense of manufacture, to systematizing and rendering more effective our selling department, and, above all things and before all things, to improving the quality of our goods and the condition in which they should reach the



consumer. It became the settled policy of this company to buy out no competition, and to that policy, since it was adopted, we have steadfastly adhered and expect to adhere to the end.

## Reform in the Drawback System.

### The Lovering Bill.

WASHINGTON, D. C., February 18, 1902.—Representative Lovering of Massachusetts on the 13th inst. introduced in the House a measure foreshadowed in *The Iron Age* several weeks ago designed to enable manufacturers in certain lines of trade to avail themselves more freely of the drawback statutes for the purpose of securing and extending their export trade. Mr. Lovering's bill is entitled a measure "to encourage the sale and exportation of articles of domestic manufacture," and relieves the exporters of the necessity of identifying the imported materials contained in their products exported with benefit of drawback. The text of this measure as presented in the House is as follows:

"Be it enacted that when ores, metals, hides or leather used in the manufacture of articles exported from the United States cannot be identified as provided for in section 30 of an act entitled 'An act to provide revenue for the Government and to encourage the industries of the United States,' approved July 24, 1897, drawback shall be allowed, provided there has been purchased and delivered to the manufacturer of the exported articles an equal quantity of like ores or metals or hides or leather on which duties have been paid of a value or cost equal at least to the value or cost of like ores or metals or hides or leather necessary for use in the manufacture of the exported articles: Provided, That the duties paid on said ores, metals, hides or leather shall not be considered as a factor in determining their value or cost: And provided further, That the quantity of ores or metals or hides or leather used in the manufacture of the exported articles on which drawback is allowed shall be charged against the records of importation, as in case of complete identification required by existing regulations under said section 30 of the act approved July 24, 1897, and that this act shall only apply to ores, metals, hides or leather which are in the warehouse or in the possession of manufacturers when this act shall become law, or which may be imported after this act shall become law.

"Sec. 2. That where imported materials on which duties have been paid are used in the manufacture of articles manufactured or produced in the United States there shall be allowed on such articles when consumed on vessels clearing for foreign countries, or when used in the construction and equipment of vessels built for foreign account and ownership, a drawback equal in amount to duties paid on materials used: Provided, That such a drawback shall be determined and paid in manner provided for determination and payment of drawback on exportation of articles of domestic manufacture and production made wholly or in any part from imported duty paid materials under section 30 of an act entitled 'An act to provide revenue for the Government and to encourage the industries of the United States,' approved July 24, 1897.

"Sec. 3. That articles of domestic manufacture and production subject to internal revenue tax may be withdrawn from warehouse free of tax for use on vessels clearing for foreign countries, under such rules and regulations as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall prescribe.

"Sec. 4. That allowance of drawback and remission of internal revenue tax on articles intended for consumption, as provided for in sections 2 and 3 of this act, shall be limited to articles consumed on board said vessels after their departure from the United States.

"Sec. 5. That section 30 of an act entitled 'An act to provide revenue for the Government and to encourage the industries of the United States,' approved July 24, 1897, be, and hereby is, amended by striking out the words 'less 1 per centum of such duties.'

Mr. Lovering's bill is the outgrowth of an investiga-

tion of the requirements of manufacturers and exporters made by Joseph H. Allen of New York, who has co-operated with Mr. Lovering in the formulation of the measure. In presenting it in the House Mr. Lovering made the following statement concerning its provisions and the effect it is expected to have upon the exportation of manufacturers containing imported materials:

"Under the provisions of the existing customs drawback law, manufacturers whose industries do not require a complicated process of manufacture can easily identify the materials entering into the exported articles to the satisfaction of the Treasury officials charged with the administration of the law. In the case of manufacturers whose products pass through an intricate process it is practically impossible to trace the materials used so that a manufacturer can make oath that a particular exported article was made in part from certain specified materials. The result is to place the manufacturers of articles requiring highly skilled labor and costly machinery in their production at a serious disadvantage, so far as recovering drawbacks on their exported products is concerned. The proposed amendment would allow the payment of a drawback on the exportation of articles where the materials used could not be positively identified, provided that it was shown to the satisfaction of the Treasury officials that imported duty paid materials equal in quantity and value to the materials used in the manufacture of these exported articles had been purchased by the manufacturer and delivered to him. This would enable many manufacturers who are now debarred from using imported materials in manufacturing for the export trade to take advantage of the drawback law, and by reducing the cost of their raw materials would greatly aid them in extending the sales of their products in foreign countries."

It will be noted that the measure as introduced by Mr. Lovering relates solely to ores, metals, hides and leather, but it may be assumed that the scope of the bill will be enlarged before it is passed. It is understood that its provisions have been circumscribed only for the reason that it is desirable that raw materials only should be given the advantages provided by the measure, and that the materials referred to in the bill have been selected as typical of those classes which might safely be granted the benefit of drawback in the manner proposed. It will also be noted that the bill requires the actual delivery to the manufacturer of the exported article of an equivalent amount of imported raw materials, and that in this respect the Lovering bill is by no means as liberal as the French drawback law. This requirement was included in the Lovering bill, however, in the belief that the measure would thus prove more satisfactory to the producers of domestic raw materials.

Section 2 of the Lovering bill is designed as a remedy for the situation which recently developed as the result of an adverse decision of the United States Court of Claims upon a petition for the payment of drawback of duty on certain imported materials used in the manufacture of lubricating oils placed on board transatlantic vessels in the foreign trade, and consumed on such vessels but not landed abroad. The court held that drawback could only be allowed in cases where the goods are landed in a foreign country, and the operation of this decision would be to cut off from benefit of drawback all supplies of every description that may be placed on board vessels to be used as ships' stores. As such goods are consumed outside of the United States and come in competition with foreign goods only, there is a strong equity in favor of the allowance of drawback claimed, but the terms of the statute, in the opinion of the court, made it necessary to dismiss the petition. Should the Lovering bill become a law, domestic goods manufactured in whole or in part of foreign raw materials used as ships' stores in the foreign trade would be entitled to the same drawback as if exported to a foreign country.

W. L. C.

**Chips of the New Block.**—Evidence of the operation of their new works, at West Allis, Wis., has just been sent to the trade by the Allis-Chalmers Company of Milwaukee, Wis. It is in the form of a neat little box containing iron chips, which were taken from the first

machine tool put in operation at the new plant. The chips were cut on February 1. The first machine tool started was a motor driven Niles planer of the very latest pattern, capable of machining a piece 12 feet wide and 10 feet high. The total length of the planer is 32 feet.

### The American Iron & Steel Mfg. Company.

Under date of February 12 J. H. Sternbergh, president of the American Iron & Steel Mfg. Company of Lebanon, has issued a report to the stockholders, from which we take the following:

During the calendar year 1901 this company manufactured 117,661 net tons of bar iron and steel. Of this quantity we sold 36,469 net tons merchant bar iron, and of the remainder we manufactured and sold 62,106 net tons of miscellaneous finished goods, bolts, nuts, rivets, &c. Our total sales of all products for the year amount to \$4,754,560.36. We have sold the real estate and buildings of our North Reading Works, and shall move most of the machinery to Lebanon and concentrate more of our work at this point. We are glad to state that we are realizing many of the advantages anticipated when our constituent companies consolidated in August, 1899. Referring to our financial statement we beg to explain that ordinary repairs and renewals of buildings and machinery are charged monthly to operating expenses and new construction to plant and equipment. The company's credit is first class. We pay for all of our purchases promptly and discount our bills whenever possible.

We are obliged to practically rebuild much of our Central Works, including the erection of a new nut shop 201 x 184 feet, a new bolt shop 201 x 150 feet, an additional warehouse 300 x 70 feet, an electric power and pumping plant 95 x 60 feet, a water tower 20 feet diameter, 70 feet high, a pattern storage warehouse 107 x 50 feet, a new bolt threading shop 200 x 74 feet, a galvanizing shop 106 x 40 feet, a new scrap iron shed 230 x 80 feet, and other buildings, besides the complete rearrangement of railroad tracks through the grounds for the more economical handling of materials, and the substitution of modern steam boilers and furnaces for the less efficient types heretofore used, and, in general, the repairing of nearly all the engines and bolt and nut machinery at the Lebanon works. Much of this work has already been done, and when all of the above improvements are completed we shall be able to execute our orders much more satisfactorily and economically.

The treasurer's financial statement for the year ending December 31, 1901, is as follows:

Assets.	
Plant and equipment.....	\$3,597,846.73
Inventory of finished goods and raw materials on hand, valued at less than present market prices..	1,269,839.88
Cash on hand and in bank.....	104,169.02
Accounts receivable.....	512,784.98
Total.....	\$5,484,640.61
Liabilities.	
Preferred stock.....	\$3,000,000.00
Common Stock.....	1,700,000.00
Accounts payable, including wages to December 31.	600,322.82
Undivided profits.....	184,317.79
Total.....	\$5,484,640.61
Dividends Paid During 1901 as Follows:	
Dividend No. 5, preferred stock.....	\$37,500.00
" " 3, common ".....	85,000.00
" " 6, preferred ".....	37,500.00
" " 4, common ".....	51,000.00
" " 7, preferred ".....	37,500.00
" " 5, common ".....	51,000.00
" " 8, preferred ".....	37,500.00
Total.....	\$337,000.00

The directors of the company for 1902 are: Edward Bailey, Arthur Brock, Horace Brock, Thomas Evans, C. M. Hallman, H. H. Light, James Lord, H. M. M. Richards, J. H. Sternbergh, H. M. Sternbergh and William H. Wallace.

The executive officers are: J. H. Sternbergh, president and general manager, Reading, Pa.; H. M. Sternbergh, vice-president, Reading, Pa.; James Lord, manager Lebanon plants, Lebanon, Pa.; H. M. M. Richards, treasurer, Lebanon, Pa., and C. M. Hallman, secretary, Lebanon, Pa.

## Modern Machine Methods.—II.\*

BY H. F. L. ORCUTT, LONDON.

### Planing.

The planer is a much neglected, long suffering machine, too often found in such dismal, unfavorable quarters that any attempts to improve either the accuracy or quantity of its product would be of little avail. Daylight and good foundations are commonly wanting in the planer department. Most of the improvements connected with the latter day practice in planer work are seemingly of little importance, but when added together give a substantial total. They can be briefly enumerated.

A quick return stroke is a feature of all up to date planers. This is now rarely less than three to one on machines up to 36-inch capacity, and on smaller sizes four to one is common. Where castings are of good quality and the machine is well designed, cutting speeds are maintained of from 25 to 30 feet per minute, and even up to 40 feet. Where castings are hard, either through design or ignorance, cutting speeds are necessarily lower. There is an immense amount of planing being done at cutting speeds of from 12 to 18 feet per minute, which could be done at the rate of from 20 to 25 feet. All planers of 24-inch capacity and upward should have two heads, and larger sizes three and four. One of the most highly productive planers the author has seen is a 24-inch machine with four heads and a 24-foot bed; it runs a close race with fast milling machines. It is claimed by a well-known machine tool manufacturer that good savings are effected by the use of variable speed countershafts with which their planers are fitted, as they can vary the speed of planers at will in accordance with the quality of material, length of stroke and depth of cut. The author has seen in but one shop a simple device which saved considerable time; it was a brake in the form of a wooden shoe, which pressed on the fast running countershaft pulleys when the belt was thrown off. All the best types of planers are quickly manipulated by an easy working lever by which the machine can be started, stopped or reversed. Few planer hands realize the time saved by good holding devices, clamps, dogs, wedges and quickly adjustable blocking pieces. Where any quantity of parts are to be planed properly arranged jigs are of as much importance as for the milling machine. Block templates which clamp the planer bed are extremely useful devices for complicated shapes.

Electric chucks for thin parts are the latest and most useful innovations. An exceedingly simple and useful little tool is the block gauge. It is cheap, lessens the chances of mistakes being made in measuring, and saves time in setting tools. The practice of periodically leveling the planer beds is astonishingly neglected, yet it is absolutely essential for good work.

### Magnetic Clutch.

The magnetic clutch driving mechanism, Fig. 1, promises to be a most important improvement in planer construction. This consists essentially of two magnetic clutch disks A, which are revolved in opposite directions and at speeds corresponding with the forward and return stroke of the planer table. The current is automatically switched by dogs on the table to either one clutch disk or the other. They alternately attract and grip disks B, shown in section, which are connected by a sleeve, which slides endwise on the driving shaft of the planer to which they are keyed. Reference to drawing will show that these disks are so made that fly wheel effect is reduced to a minimum. This arrangement makes it possible to reverse a planer table with a motive power very little in excess of that required to drive it. With the ordinary belt drive the amount of power consumed at the moment of reversal is from 75 to 100 per cent. in excess of that necessary to move the table when under cut, whereas with the Riddel electric clutch drive on 10-inch planer the increase in power is only about 15 per cent. The mechanism is

\*A paper read before the Institution of Mechanical Engineers.



practically noiseless and reverses more accurately to a line than with a belt drive.

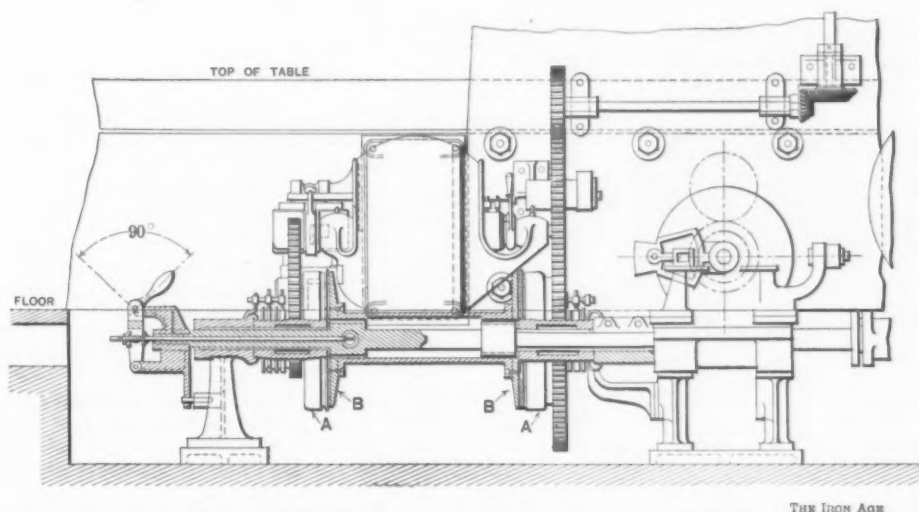
#### Grinding.

Grinding is probably the most ancient of all mechanical operations. As an operation by which accurate surfaces are cheaply produced, it is, however, a development of the last few years. The plain and universal grinding machine in its latest form is now a manufacturing machine as much as the lathe or milling machine; its use is no longer restricted to the tool room or for finishing hardened parts. It is conceded by those who use the grinder extensively and are expert in manipulating it that it is the cheapest as well as the best machine for producing mechanically correct cylindrical surfaces where good work and interchangeability are desirable. This is true respecting soft as well as hard steel, cast iron or bronze. The turner and the file cannot compete with the grinding machine and the limit gauge. The author believes it is safe to state that, excepting in heavy work, the grinding machine and the turret lathe will in the near future absorb 50 per cent. of the lathe work now performed by skilled turners. Parts can be roughed out on lathes by unskilled attendants, each running from two to three lathes, allowing from 0.006 to 0.008 on parts up to 4 inches diameter for finishing, and

recorded that a 4-inch shaft, 3 feet long, can be finished on this machine in six minutes, the shaft to be previously rough turned with a 12 per inch feed and left 0.01 above size at the bottom of the tool marks. Parts up to 7 inches diameter are rapidly finished, the limit of variation being 0.001 inch. Knowing that results like the above have been accomplished, few manufacturers can neglect to seriously consider grinding as an important method by which costs may be reduced and quality of work improved.

#### Chucking.

Chucking is an American term used to designate that class of work which is held in a face plate chuck in either a vertical or horizontal turret machine, and is operated upon by a series of tools which finish a cylindrical hole. Comparatively true cylindrical surface, cheapness of operation and interchangeability are virtues sufficient to recommend a proper system of chucking to enterprising manufacturers. Its adoption in accordance with the best practice need not be restricted to those who only make in large quantities or turn out very close work. Whether there is one piece or 500 to be chucked, whether the fit has 1-64 or 2-1000 inch play, the system is profitable. In the same manner that milling is specialized to secure accurate flat surfaces at a low



THE IRON AGE

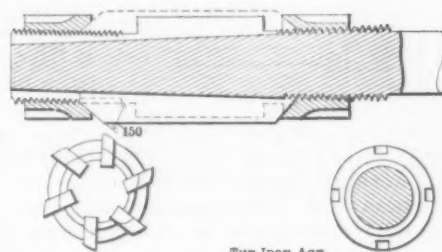
Fig. 1.—Magnetic Clutch Applied to Driving an 84-Inch Planer.

then accurately finished almost to the nicety of a gauge on grinding machines, one operator keeping two of these machines at work. For good cylindrical grinding machines of extreme stability are necessary to resist vibrations; they must be of the very best workmanship and capable of handling a large stream of water, by which the work is kept at an even temperature. Accurate limit gauges are of great assistance as measuring instruments in the grinding department, for they can be more readily used in many instances than micrometers or vernier calipers.

Surface grinders, where accuracy is necessary, are not much used except where comparatively small areas are in question. Where accuracy is not of much importance, they will be found effective for a great deal of work, and more economical than hand polishing. One man can keep from four to five machines in operation. They are best when arranged with exhaust pipes for removing dust, as the present machines are not constructed to be used with a stream of water. As for planers, electric chucks are again the latest and most useful accessories to surface grinders.

Where accuracy is required on flat surfaces, except those of small dimensions, nothing in the way of a machine operation has been devised to take the place of hand scraping, or where hardened surfaces are in question, hand lapping.

The most striking example of advanced practice in cylindrical grinding is that of work recently done on a machine capable of finishing parts up to 8 inches in diameter and up to 18 feet long, carrying a grinding wheel 24 inches in diameter with a 2-inch face. It is



THE IRON AGE

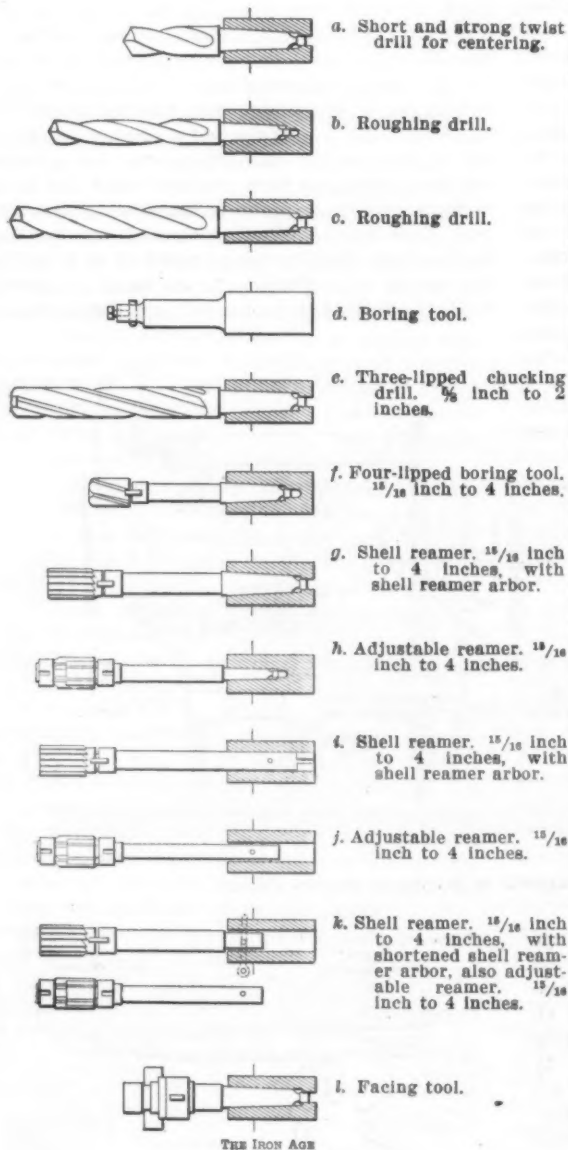
Fig. 2.—Adjustable Reamer.

#### MODERN MACHINE METHODS.

cost, so is chucking specialized for the purpose of securing accurate cylindrical holes with comparatively unskilled machine attendants. Chucking machines, with proper outfits of boring tools, are as much a part of a modern engineering equipment as milling machines with their outfit of cutters and arbors. One prominent English manufacturer told the author that the introduction into his works of a chucking department revealed the fact that he had never before made holes that could be called round. The best system calls for a series of tools, usually varying in number from four to six for each diameter, the final operations in most cases being performed by an adjustable reamer, which takes about 0.004 inch, Fig. 2, all holes being tested by an inside limit gauge.

For cast iron, when parts are not too light weight, the vertical machine is best adapted. One operator can in most cases attend two machines. Other operations, such as facing and turning, are often to advantage combined with chucking work. For steel work where oil is used and light parts, or parts with a long hole, the horizontal machine is better adapted. As in many other operations which are specialized, comparatively unskilled labor can be employed, but the highest skill is required to supervise and keep machines and tools in proper working condition. The tools ordinarily used consist of undersize

engineering establishment. The principal improvements in design to be noted in the modern lathe are quickness, ease of manipulation and rigidity. There is also a growing appreciation of the value of a lathe possessing the best quality of workmanship, even when used for comparatively rough work. Referring particularly to light lathe work, recent developments in other machine tools have taken away from the lathe a large amount of work for which it was formerly thought that this machine was indispensable. Except in special cases, the boring of holes is now largely relegated to the chucking



THE IRON AGE

Fig. 3.—Tools Used in Vertical and Horizontal Chucking Machines.

## MODERN MACHINE METHODS.

twist drills, boring tools, three-lipped chucking drills, four-lipped boring tools, roughing reamers, finishing reamers, adjustable and facing tools. A part or all of these may be used, in accordance with the work and available machines, Fig. 3. The best shop organization demands a department equipped with chucking machine, tools and gauges, to which every part within the scope of the department should be sent. The results are a reduction in the costs of boring, a higher degree of accuracy, and the attainment of interchangeability. With a proper outfit, holes up to 3 inches diameter can be easily finished by comparatively unskilled workmen to within from 0.0005 to 0.0010 inch of standard size.

## Turning.

The lathe has been, and will continue to be, one of the most important machines in the equipment of an

department. The accurate finishing of plain parts, and in many cases of parts of considerable complication, is done in the grinding department. Where repetition, even of small quantities, is possible, parts up to 2 feet long and 2 inches diameter are sent to the turret machine department. It is now recognized that it is poor economy to make a polishing bench of a fine screw cutting engine lathe. It seems pretty well assured that in the future the lathe will be largely used as a roughing out machine. Following this line, a great deal of work can be done by unskilled labor, one man keeping two or three lathes in operation. Stiff lathes, fitted with double tool post and with pump and pans, so that the work can be flooded with soapy water, are found to be a means of reducing parts much cheaper than smith work. For instance, soft machinery steel spindles can be reduced 3½ inches in diameter at one operation by means of two cutting tools,

## Chucking and Boring Tools.

## For Vertical Chucking Machines with Four Holes in Turret.

1. For chucking from the blank:  
a. c. i. j., or b. e. f. j., or a. b. e. k., or a. c. k. l., or d. e. k. l.
2. For chucking cast holes:  
d. f. i. j., or d. e. f. j., or d. f. k. l., or d. e. k. l.

## For Vertical Chucking Machines with Five Holes in Turret.

1. For chucking from the blank:  
a. b. e. f. j., or a. c. i. j. l., or a. b. e. k. l., or b. e. f. j. l.
2. For chucking cast holes:  
d. f. i. l., or d. e. f. j. l., or d. f. k. l., or d. e. k. l.

## For Horizontal Chucking Machines with Four Holes in Turret.

1. For chucking from the blank:  
b. e. g. h., or c. g. h. l., machines with rest.
2. For chucking cast holes:  
d. e. g. h., or d. f. g. h., machines without rest.  
e. g. h. l., machines with rest.

## For Horizontal Chucking Machines with Six Holes in Turret.

1. For chucking from the blank:  
a. b. e. g. h. l., or a. c. g. h. l.
2. For chucking cast holes:  
d. e. g. h. l., or d. f. g. h. l.



which would have a feed of about 0.007 inch per revolution. Table II is interesting as showing possibilities in this direction.

Table II.—Tool Speeds for Cutting Soft Steel.\*

Number.	Material.	Diameter		Depth of cut	Revolutions per minute	Cutting speed, feet per minute.		Feed per revolution.
		before turning	after turning			At other circumference.	At bottom of cut	
1	Soft machinery steel.	5/4	1 3/4	1 3/4	25	3.1	14.25	0.007
2	Soft machinery steel.	1 1/8	1 7/8	1 1/2	27	121	49.5	0.006
3	Total steel .....	3/4	2 3/4	1 1/2	30	29.4	21.5	0.010
4	Total steel .....	2 3/4	1 1/8	1 1/2	45	29.4	20.25	0.010

Number.	Material.	Original diameter		Depth of cut.	Revolutions per minute.	Cutting speed, feet per minute.	Feed per revolution.
		in.	in.				
5	Cast iron .....	4 1/4	1 1/2	37	41	3 1/2	0.035 Roughing cut.
6	Cast iron .....	4 1/4	1 1/2	100	111	3 1/2	0.035 Finishing cut.
7	Soft machinery steel..	4 1/4	1 1/2	23	28.5	1 1/2	0.081 Roughing cut.
8	Soft machinery steel..	4 1/4	1 1/2	63	78	2 1/2	0.04 Finishing cut.

\* American Machinist, September 20, 1900.

It is in many cases one man working three pieces in the lathe department *vs.* three men working on one piece in the forge shop. All the modern innovations which are either supplanting or improving lathe work, such as chucking, grinding, screw machine work, polishing and roughing, are accompanied by a reduction in costs of manufacturing, the employment of less skillful machine attendants, an increase in the number of machines that one man can attend, and better work. It should be mentioned that the various processes of treating turning tools may revolutionize lathe construction. Speeds, feeds and strains must all be recalculated. Cutting speeds from 80 to 120 feet per minute are now quite common. Where the lathe is used for roughing out, from 0.006 to 0.008 is sufficient to leave for finish grinding. Roughing limit gauges are useful for this work.

A summary of the latest practice in connection with lathe work would include the following: 1. Chucking or boring transferred to the turret chucking machine. 2. Finishing transferred to the grinder. 3. Repetition work, even for a dozen pieces, transferred to the screw machine. 4. Polishing transferred to a separate department. 5. A great deal of forge work transferred to the roughing out lathe. 6. Castings like hand wheels, flanges or grooved pulleys, bevel wheels, &c., transferred to the circular milling machine. 7. A great increase in cutting speeds.

(To be continued.)

### Protection from Water Damage.

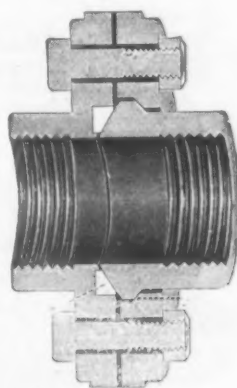
The last report of the Boston Manufacturers' Mutual Fire Insurance Company contains the following:

The attention of members is urgently called to the expediency of providing protective covers for machinery and stock. In the present fire report two instances are given in which heavy damage has been prevented by the quick and judicious application of Oleoid blankets, especially in the recent fire in the picker room of the Boston Mfg. Company. We may also cite two other examples, one in December with a loss of \$18,000 and one in January with a loss estimated at \$100,000, in which almost the whole damage is from water, a very large part of which might have been saved by the quick and ready application of protective covers to the machinery and stock. The most effective water proof covering for machinery and stock, at the lowest cost, is known as the Oleoid Blanket, made and sold in all sizes by Henry K. Barnes, 104 Franklin street, Boston. Although this is made of cotton cloth treated with oil, corresponding in appearance to common oil cloth, it is also treated in

a way to prevent spontaneous combustion. It has been thoroughly tested in our laboratory, and has also stood the test of time in risks where it has been used and proved to be safe. In one of the most effectively managed mills in Fall River, where coverings were used over the cards in a recent fire, the saving on a conservative estimate was \$10,000, and also the saving of a long delay in starting up the mill. At this mill the cover is attached to the card frame and rolled up like a window curtain. On the instant of a fire anywhere the cover is drawn out of its metal casing and immediately spread over the card. A liberal supply of covers and racks attached to the walls in several different parts of the card room may be perhaps an equally suitable method, provided the men in the room are well trained in their use.

### The Jefferson Pipe Union.

The principal feature of the pipe union and flange designed by the Jefferson Mfg. Company of Boston is a ball joint with a bronze seat firmly incased in malleable iron, both upon the inner and outer side. This makes it impossible to force the seat out of place and permits any number of connections, while still maintaining a tight joint. The use of the ball shoulder joint insures the true seating of the parts without reference



THE JEFFERSON PIPE UNION.

to the alignment of the pipe. The union for high and low pressures and with either brass, copper, lead or iron seats.

**The National Mining Company.**—The United States Steel Corporation, through their subsidiary company, the National Mining Company, have arranged for their first coal mining operation in the Pittsburgh district. The National Mining Company have let all the contracts for the equipment and opening of their first mining plant in the Pittsburgh district, on the Bridgeville and McDonald branch of the Panhandle Railroad. The mining property, which aggregates 8000 acres, is sandwiched between operations of the Pittsburgh Coal Company. Plans for the plant were made by F. A. McDonald, chief engineer of the National Mining Company. A force of men have been put at work to make the excavations for the slopes and shafts of the initial plant. This plant will embody all the modern improvements in coal mining. It will develop about 1800 acres of the body of coal, and the output after operations have started will be nearly 3000 tons a day. About 450 miners will be employed.

The fifth quarterly report of the Pittsburgh Coal Company Employees' Association shows that the net earnings of the association from the date of organization, December 1, 1900, to January 1, 1902, a period of 14 months, was \$18,148.84. The report shows that 844 purchasers of stock through the association now hold 6172 shares. The association has purchased and now holds in its treasury a sufficient amount of the preferred stock of the Pittsburgh Coal Company to cover their contracts with the respective purchasers. The average cost of this stock thus acquired and held in the treasury is \$92.52 a share.

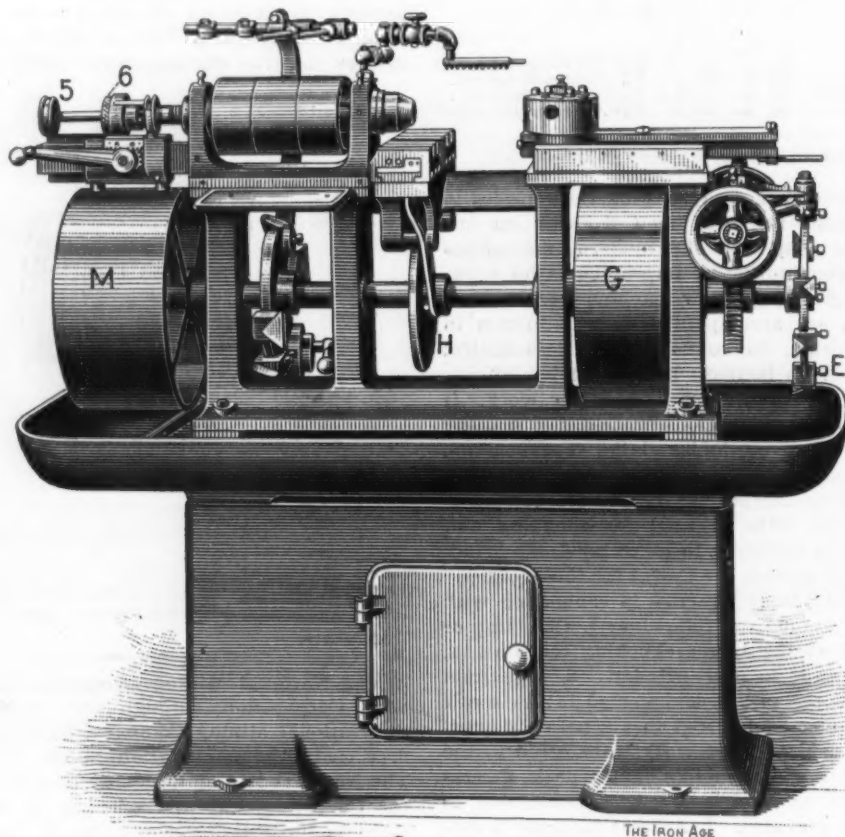
## Camming Automatic Screw Machines.

BY C. L. GOODRICH, HARTFORD.

The use of turret head screw machines, both hand and automatic, has greatly increased since the advent of the bicycle, and they have proven themselves great cost reducers. One of the most common screw machines of the automatic type is one manufactured by the Pratt & Whitney Company, and is illustrated in Fig. 1. These machines were particularly designed for making work of circular cross section from bars of round, square or hexagon metal, but their construction is such that magazine attachments may be readily applied for automatically handling castings and forgings as well as rod work, so that the machine is suitable for a wide range of work. In these machines all the operations are wholly automatic, the desired movements to turret, cut off and forming slides and the opening and closing of the chuck for gripping the work being controlled by a series of cams, or more properly cam strips, located on drums on a

while the chuck is being unlocked and locked and stock fed out, so that it is customary to begin camming the machines with the locking drum, M, Fig. 2, assuming that the work has been just cut off and the chuck is firmly locked. The first movement is to unlock the chuck; the cam for unlocking, R, Fig. 2, is put on at an angle of 25 degrees to the edge of the drum, and should be long enough to move the chuck operating roller 2 a sufficient amount to fully release the chuck from its grip on the work. As soon as this is accomplished the feeding cam P should begin operating the feed roller 7. This cam is generally put on at 50 degrees and should, of course, have sufficient throw to feed the stock at least as much as the longest piece that is to be made in the machine. Immediately after the feeding cam has reached its highest point the chuck locking cams should begin to return the chuck roller to its initial position. The cam for this should be put on at an angle of from 20 to 25 degrees—20 degrees for heavy and 25 degrees for light small work.

In positioning the feeding cam first adjust the



CAMMING AUTOMATIC SCREW MACHINES.

shaft running lengthwise of machine in the lower part of the frame.

Camming the turret drum of this machine so as to obtain the highest efficiency has been given considerable thought by the Pratt & Whitney Company, and as there has been no printed matter on the subject the following may prove to be of interest: Generally speaking, during one revolution of the turret drum a piece of work is finished, and during this time the turret slide moves forward and back, the turret is revolved and the several tools brought in proper relation to the pieces being produced. The movements of the turret slide, the cross slide and collet opening and closing mechanism, &c., must, of course, be so timed as to avoid interference. To obtain the highest production the angles of the cam strips controlling the movements of the various slides must be such as to make sure that each cutting tool does its full duty. It is also desirable, in most cases, that the turret drum cams completely fill the periphery of the drum, so that there will be no waste time.

Before camming the turret drum it is necessary to know the amount of space that it is necessary to allow

grooved collar on the stock feed plunger 5 against the chucking finger ring 6; this point represents the furthest to the right that the feed roller can move and the high point of the feeding cam should end here, but it may extend to the left to the edge of the chucking drum or even further in case of long feeds. The last cam, Q, to be put on this drum is for drawing the stock feed tube back for another piece. It is usually made adjustable and swings from a center. Care should be taken not to put it so far to the right as to come in contact with the chuck locking roller 2. As the camming of the locking drum is very simple it is seldom considered necessary to make a drawing of it, but the camming of the turret drum should always be to a drawing. First, therefore, a full size rectangular sketch, the length representing the circumference and the width of sketch representing the width of drum, should be made. The following measurements of machine should be taken in the manner described below.

Place the turret tools in correct position in the turret and push the turret slide toward the chuck as far as is necessary for it to go in order that the tools be in proper



relation to work; then with a bent scratch awl scribe the drum at the right side of the turret slide operating roller X, as *a*, Fig. 3. This represents the furthest forward position of the turret, and no cam which pushes

Prior to figuring the cams for the turret drum G, Fig. 2, the distance between these three lines, the circumference of the turret drum, the amount of space necessary for unlocking and locking the chuck and feed-

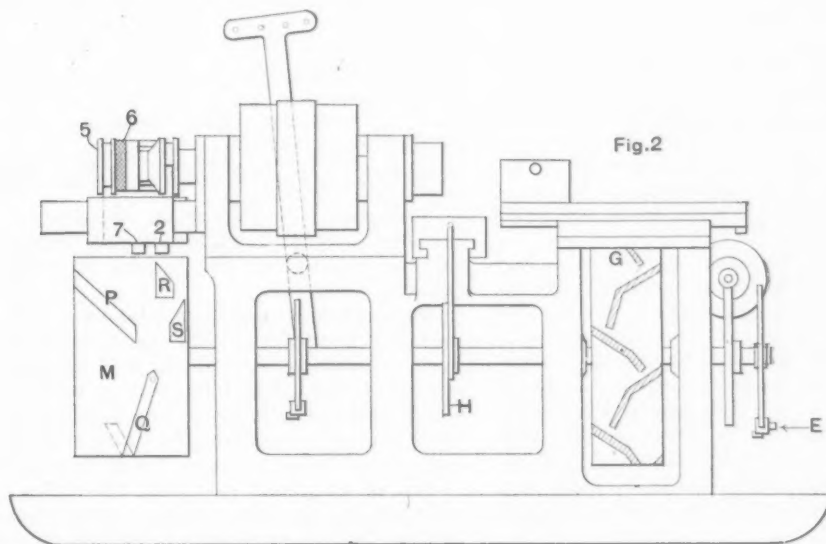


Fig. 2

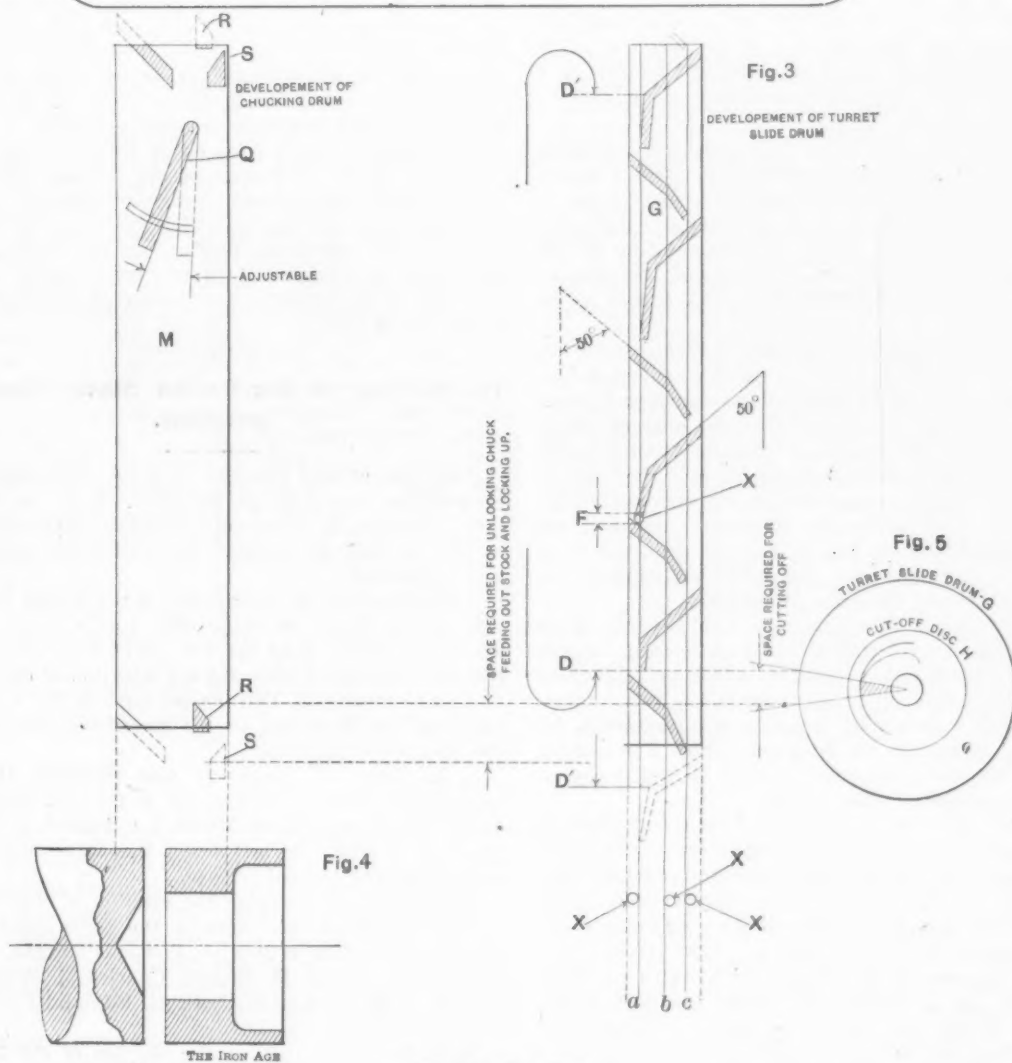
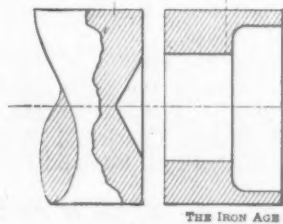


Fig. 3

Fig. 5

Fig. 4



THE IRON AGE

Camming Lay Out.

## CAMMING AUTOMATIC SCREW MACHINES.

the turret slide toward the head should extend beyond the point scribed.

The slide should then be pulled back to the position where indexing of the turret commences, and the drum scribed on the left hand side of the roller, as *b*, Fig. 3. Next bring the turret slide way back as far as it will go (the turret being fully indexed and locked), and scribe the drum on the left hand side of the roller, as *c*.

ing out stock must be known. Fig. 3 represents a camming layout of turret drum for work, as per Fig. 4, and the manner in which this particular set of cams were laid out is herewith briefly described.

## Laying Out Cams.

A. The material was cold drawn machinery steel and spindle speed 225 revolutions per minute, estimated

correct. The turret tools and feed per revolution considered suitable were as follows:

First hole.—Spotting or starting tool:	0.005 inch feed, $\frac{1}{8}$ inch deep, $+ \frac{1}{8} = \frac{1}{4}$
Second hole.—9-16-inch twist drill:	0.007 inch feed, $\frac{1}{8}$ inch deep, $+ \frac{1}{8} = \frac{1}{4}$
Third hole.—Rough counterbore:	0.010 inch feed, $\frac{1}{4}$ inch deep, $+ \frac{1}{8} = \frac{1}{2}$
Fourth hole.—Finish counterbore:	0.020 inch feed, 7-32 inch deep, $+ \frac{1}{8} = 11-32$ 0.008 inch last, 1-32 inch deep, $= 1-32$
Total .....	$= 1\frac{1}{4}$

\* To the actual depth of cut for each turret tool there was allowed  $\frac{1}{8}$  inch for safety, changes to model, &c., so that to the above there should be added this amount.

The indexing of the turret represented from *b* to *c* should be at a rate of about 20 feet per minute, this rate depending greatly on the weight of the turret tools. The motion of the cam shaft can be made fast and slow; the cutting tools while actually cutting are generally brought up with the cam shaft at its slowest speed, while all other movements of the turret slide are in most cases obtained with the cam shaft at its fastest speed. This variation of speeds is automatically obtained by means of movable dogs attached to a disk, E, Fig. 2, on the cam shaft, and which shift the clutch mechanism from fast to slow or the reverse.

Assuming a ratio of 24 to 1 between the slow and fast speeds it is obvious that the feed of the turret slide in inches per revolution while indexing at 20 feet per minute would be 20 feet  $\times 12$ , or 1.066 inches per revolution.

225 (R. P. M.)

tion of spindle. It is desirable to express all the feeds per revolution at its equivalent at slow cam shaft speed, so that the index feed in these terms would be equal to 1-24 of 1.066, or 0.44 inch approximate per revolution. The distance from *a* to *c* we will consider as  $2\frac{1}{2}$  inches, and from *b* to *c*, the index stroke,  $1\frac{1}{4}$  inches, then we have a total for four holes of 7 inches index stroke.

The cams for governing all idle movements, or in other words, while tools are not cutting or turret indexing, are generally put on as steep as considered practical, the usual practice being about 50 degrees. It is unwise to exceed 55 degrees, owing to excessive side pressure, and seldom necessary to put less than 50 degrees. In our calculations therefore, the amount of the circumference required by the 50-degree cams and the eight roll spaces (see F, Fig. 3) may be deducted from the total circumference and the problem simplified. In Fig. 3 the 50-degree cams are indicated.

The turret having four holes, the total amount of its forward and backward travel, as far as figuring cams is concerned, is equal to  $8 \times$  (distance *a* to *c*, or  $2\frac{1}{2}$  inches) = 20 inches; of this 20 inches there is  $1\frac{1}{4}$  inches taken by cutting and 7 inches by indexing (see paragraph A), leaving  $11\frac{1}{4}$  inches for the 50-degree cams. The peripheral space necessary for this is equal to  $11\frac{1}{4} \times$  (cotangent 50 degrees 0.84) = 9.45 inches.

If the diameter of the cam rod is 1 inch, and allowing  $\frac{1}{8}$  inch freedom, the amount of periphery required for the eight spaces equals  $8 \times 1\frac{1}{8} \times$  (cosecant of 50 degrees, or 1.3) = 11.7. Thus the total amount of drum space actually at our disposal for the working or cutting and for the indexing cams is equal to total circumference — 9.45 — 11.7 inches. If the diameter of the turret drum is 18 inches, the circumference would be 56.54, which minus 9.45 inches and 11.7 inches equals 35.4 inches or space available for cams to be figured.

Again referring to paragraph A, we may summarize as follows:

	Revolutions necessary for this travel.
First hole.—Travel, 0.250 inch at 0.005 inch per rev. ....	= 50
Second hole.—Travel 0.750 inch at 0.007 inch per rev. ....	= 107.1
Third hole.—Travel 0.875 inch at 0.010 inch per rev. ....	= 37.5
Part of fourth hole.—Travel 0.3487 in. at 0.020 in. per rev. ....	= 17.2
Part of fourth hole.—Travel 0.0312 in. at 0.006 in. per rev. ....	= 5.2
Indexing.—Travel 7 inches at 0.044 inch per rev. ....	= 159
Total number of revolutions .....	= 376

To every 1 inch of drum space at our disposal it is evident the spindle will revolve  $376 \div 35.4 = 10.6$  times.

The correct angle for any of the above feeds is one whose tangent is equal to  $10.6 \times$  feed per revolution.

For first hole we have:	0.005 inch $\times 10.6 = 0.053$ inch = tangent of $3^\circ 2'$
For second hole we have:	0.007 inch $\times 10.6 = 0.074$ inch = tangent of $4^\circ 14'$
For third hole we have:	0.010 inch $\times 10.6 = 0.106$ inch = tangent of $6^\circ 4'$
For fourth hole we have:	0.020 inch $\times 10.6 = 0.212$ inch = tangent of $11^\circ 59'$
For fourth hole we have:	0.006 inch $\times 10.6 = 0.064$ inch = tangent of $3^\circ 40'$
Index.....	0.044 inch $\times 10.6 = 0.466$ inch = tangent of $25^\circ$

The cams may all now be sketched on. There still remains, however, the allowance for cutting off, unlocking and feeding out and locking up chuck to be considered.

The cutting off tool should take a cut of about 0.0025 inch per revolution. The work could be partly cut down simultaneously with the drilling operation to a diameter of, say, 11-16 inch, leaving a wall of 1-16 inch, which would require about 30 revolutions to cut off. As there are 10.6 revolutions (see above) of the spindle to every 1 inch of drum travel the space required for finish cutting off equals  $30 \div 10.6$ , or 2.85 inches. There must be this space plus the amount found necessary for unlocking, feeding out stock and locking up chuck between the cam for last and for first cut (see D to D', Fig. 3). If there is not sufficient space, the excess amount required should be deducted from the original figured available space and the problem again calculated from that point. This is seldom the case, however.

Knowing the distance on either the chucking or locking drums or cut off disk necessary for any operation it may be easily transferred to another radially (see Fig. 5). This is the method by which the space on the locking drum for unlocking, feeding out and locking up of the chuck is transferred to the turret drum and the space on the turret drum for the cut off tool transferred to the cut off disk.

### The Meeting of the United States Steel Corporation.

The first annual meeting of the United States Steel Corporation was held at Hoboken, N. J., on the 17th inst., 77 per cent. of the capitalization being represented in person and by proxy. The following propositions were approved:

1. In favor of approving and ratifying all contracts, acts, proceedings, elections and appointments by the Board of Directors or the Executive Committee or the Finance Committee since the organization of the corporation on February 25, 1901, as set forth in the minutes of the Board of Directors or the Executive Committee or the Finance Committee.

2. In favor of approving and ratifying the three agreements with J. P. Morgan & Co., syndicate managers, dated respectively March 1 and April 1, 1901, and January 3, 1902, the last being the agreement of final settlement and mutual release.

3. In favor of ratifying the election of the following named persons as directors of the third class for the three years ending in 1904: J. Pierpont Morgan, John D. Rockefeller, Henry H. Rogers, Charles M. Schwab, Elbert H. Gary, George W. Perkins, Edmund C. Converse and Percival Roberts, Jr.

4. In favor of ratifying the election of the following named persons as directors of the second class for the two years ending in 1903: Francis H. Peabody, Charles Steele, William H. Moore, Norman B. Ream, Peter A. Widener, James H. Reed, Henry C. Frick and William Edenborn.

5. For the following named persons as directors of the first class for the three years ending in 1905: Marshall Field, Daniel G. Reid, John D. Rockefeller, Jr., Alfred Clifford, William E. Dodge, Nathaniel Thayer, Abram S. Hewitt and Clement A. Griscom.

6. For Price, Waterhouse & Co., as independent auditors, to audit the books and accounts of the corporation at the close of the fiscal year ending December 31, 1902.



## Lake Iron Ore Matters.

DULUTH, MINN., February 15, 1902.—By the taking of 500,000 tons of room for ore at 80 cents a ton, James Corrigan practically settled the lake rate at the figure predicted for some time in this correspondence. The United States Steel Corporation are not paying that, however, and are still offering 75 cents from the head of the lakes to Lake Erie ports. Other shippers are liable to fall in behind Corrigan, and vessel owners will be slow to accept 75 cents when 80 cents has been paid for large blocks of tonnage. Eighty cents is the rate established by the Steel Corporation a year ago, when there were fewer vessels than now, and is a very paying rate for the owners of modern tonnage. It is enough. There will be an immense volume of ore, more wheat than early in 1901, and more coal, but far less corn, and corn is the big item in tonnage aside from ore. Then there will be some 30 more big ships to carry the stuff and some improvements in lower lake receiving docks, that will help to give vessels the improvement in dispatch that is so much needed. The Steel Corporation are in the market, it is said, for vessel room to the amount of 4,000,000 to 5,000,000 tons, aside from their own capacity on their 112 ships. A considerable proportion of these ships is of old and somewhat obsolete tonnage, vessels of smaller size and more antiquated build and mechanism than the more recent additions to lake fleets, and the entire fleet will not carry as much ore as a similar number of such ships as the lake yards are now turning out.

The Andrew Carnegie interest in the Ashtabula Dock Company has been sold, I learn, to M. A. Hanna & Co., who now control the company. It is in anticipation of more extensive ore interests in the upper lake region. As an indication of the way in which another Cleveland firm, that had been rather left out by the organization of the big companies, are preparing for mining operations, is the sale of powder to Pickands, Mather & Co. Their purchases of blasting powder for the present year will be second in volume among the mining concerns that buy at the head of the lake, and are several times what they bought a year ago. It is quite evident that neither of these old mining, ore selling and shipping firms intend to be as nearly out of the ore business as might have been supposed from events of a year or so past. Considerable of the business of Pickands, Mather & Co. will be for others than themselves, of course. A recent purchase of mining lands upon the Mesaba range, that I credited to that firm, was for the Youngstown Iron, Sheet & Tube Company, who have now bought three properties. The most important of these is the west half of the southwest quarter of section 32, T. 58, R. 20, where some 3,670,000 tons of ore have been brought into sight by explorations conducted some time ago by E. J. Longyear. The average iron content of this quantity is 58.67 per cent. and of phosphorus 0.071 per cent. Mr. Longyear is of the opinion that the ore area could be increased, perhaps to a large extent, by further explorations to the south and southeast of hole No. 11, which is a very deep hole near the center of the tract. There is also a probability of ore under the taconite, in which most of the holes were bottomed. Another of these purchases is 60 acres lying chiefly in section 12, T. 57, R. 21, where a smaller deposit has been found, some of it suited for steam shovel mining. The third is in section 7, T. 57, R. 17, south of the Fayal Mine, where a small deposit is shown.

Capt. Jos. Sellwood and some of his Cleveland friends have formed the Bradford Mining Company and have taken two West Mesaba properties, one being the corner of ore lying to the north of the Clark Mine and west of the Chisholm, being a part of the deposit of these two properties and locally known as the Pearce. The other is a westerly extension of the United States Steel's Pillsbury Mine, and located in the northwest quarter of the southwest quarter of section 29, T. 58, R. 20. Both will be opened and mined for a reasonable tonnage this year.

H. L. Holden, dock agent of the Duluth & Iron Range road, has issued a statement of the business of the docks for last year, which is especially interesting, as

the business of these docks was the greatest of any iron traffic in the world. The total amount of ore shipped over the docks for the season, which commenced May 10 and ended December 2, a period of 206 days, was 5,010,344 gross tons. In that time 1082 cargoes were loaded, an average of 4630 gross tons per cargo. The maximum cargo was 7473 tons on the schooner "Manila" of the Pittsburgh Steamship Company (United States Steel), and the smallest on the steamer "D. D. Calvin," 787 tons. The biggest month in the year was July, with 964,486 tons, and the biggest single mine shipment was that of the Fayal in that month, 375,814 tons.

Decrees have been entered in the United States Court returning to the State of Minnesota some 40,000 acres of land along the Mesaba range that had been decreed to the United States Steel Corporation through error of the court and subsequent laxity of the State's attorneys. This property is now known to contain at least one large mine, a single 80 acres being sold this week at \$225,000 bonus to P. L. Kimberley, and it also contains two smaller mines and perhaps others that have not yet been found. It is somewhat contrary to the general methods of corporations to give up, freely and without struggle or compensation of any kind, what they may have secured a fighting chance for. It is especially commendable in the Steel Corporation to thus give up these lands, as it is quite probable that not only will their mining corporation lose the ores, but their railway corporations will lose the haul of the ores to Lake Superior, and this alone is a plum well worth fighting for. But the State had equity, and in the long run would have undoubtedly had the law also, and the corporation recognized the point and withdrew gracefully and honestly. Their position in this State, as a corporation—or as a trust, if you will—has been mightily strengthened in the minds of the public by this event, and strength with the public means, in Minnesota, less friction and more dollars ultimately. But corporations, as a general thing, do not look far enough ahead to recognize this argument.

Publication has been made of the fact that A. B. Wolvin, head of the steel corporation's lake fleet, was at the head of a company to operate on the lakes and to Quebec, for the foreign trade, and that the concern propose to have 20 or more ships on the lakes, some of which would be built this year. The fleet, which will be called the Great Lakes & St. Lawrence Transportation Company, is generally supposed to be intended, primarily, for the moving of export grain and grain products. In point of fact it is nothing of the sort, but is in its essence a plan for the facilitation of the export trade in steel and steel products, and the main business of the fleet will not be from Duluth, but from lower Lake Michigan and Lake Erie ports to the Atlantic. As such the new fleet will do to watch as a matter of importance to the United States steel trade. It will be 1903, at least, before it becomes a factor of importance in the export trade, either for grain or steel.

The new ore crushing plant of the Republic Mine, Marquette range, is completed, but will not be operated except for tests, until the opening of navigation. With the completion of this plant every hard ore mine operating on the Marquette range is equipped with large and powerful crushing plants, either jaw or centrifugal style.

Contracts for the erection of additional ore dock capacity for the Eastern Railway of Minnesota, at the head of Lake Superior, have been let to Minneapolis contractors for about \$300,000, including timber to be brought from the Pacific coast by the railroad company themselves. This will increase the dock storage capacity from 70,000 to over 100,000 tons.

D. E. W.

Robert W. Hunt & Co., engineers, of Chicago, have been given the inspection of rails, splice bars, bolts, nuts and spikes which the Mexican National Railway Company have purchased in England and Belgium. They have also been given the inspection of rails which the Louisville & Nashville Railroad Company have purchased in Germany. John J. Cone of the firm will have immediate personal charge of the inspection of this ma-

terial, and will take with him to Europe a detail of men selected from the firm's American corps of inspectors.

### Changes in United States Boiler Regulations.

The following changes have been made by the Board of Supervising Inspectors of the Treasury Department in the rules governing the construction. The parts struck out are in brackets, [thus], the additions being inclosed in a parenthesis, (thus):

But no flat surface shall be unsupported at a greater distance in any case than [16] (18) inches.

(Wrought iron tubes, however, may be used without being subjected to the tests required from tubes made of Bessemer, acid or basic open hearth steel.)

(The bronze casing of) all fusible plugs, unless otherwise provided, shall have an external diameter (of) not less than that of a [1] ( $\frac{3}{4}$ ) inch gas or steam pipe screw tap, except when such plugs shall be used in the tubes of upright boilers, plugs may be used with an external diameter of not less than that of a  $\frac{3}{8}$ -inch gas or steam

be substantially beaded (over or outward) into a recess in the face of each flange.

All lap welded iron or steel steam pipes over [5] ( $5\frac{1}{2}$ ) inches in diameter or riveted wrought iron or steel (or seamless drawn steel) steam pipes over [5] ( $5\frac{1}{2}$ ) inches in diameter, in addition to being expanded into tapered holes and substantially beaded into recess in face of flanges, shall be substantially and firmly riveted with good and substantial rivets through the hubs of such flanges; and no such hubs shall project from such flanges less than 2 inches in any case. (Provided, however, that when such pipes are double riveted into cast steel, wrought iron or homogeneous steel flanges, said flanges to be equal in strength to the strength of the pipe, the process of expanding and beading may be dispensed with. It is further provided that for pressures of 100 pounds and under said pipes may be single riveted to the flanges in lieu of double riveting. The joints of all flanges shall be made with a sufficient number of good and substantial bolts or rivets to make such joints at least equal in strength to all other parts of the pipe.)

All coil and pipe boilers hereafter made, when such



Fig. 1.—Wheel Metal, Center of Test Bar (750 Diameters).



Fig. 2.—Wheel Metal,  $\frac{1}{4}$  Inch Below Surface of Tread (110 Diameters).

pipe screw tap, [said plugs to conform in construction with plugs now authorized to be used by this board] (and no such plugs shall be used unless the core of the plug is filled with good Banca tin from end to end of the bronze casing), and it shall be the duty of the inspectors to see that those plugs are (so) filled [with Banca tin] at each annual inspection.

(The manufacturers of fusible plugs, whether boiler makers or others, shall stamp their name thereon for identification, and file with the local inspectors in the districts where their plugs are in most general use a certification stating that the fusible plugs manufactured by them are filled with good Banca tin, in the manner described in this section.)

All copper steam pipes shall be flanged (over or outward) to a depth of not less than [four times] (twice) the thickness of the material in the pipes.

The flanges of all copper steam pipes over 3 inches in diameter shall be made of bronze or brass composition, shall be securely brazed (or riveted) to pipe.

The terminal and intermediate joints of all wrought iron and homogeneous steel feed and steam pipes over 3 inches in diameter, other than on pipe or coil boilers or steam generators, shall be made of wrought iron, homogeneous steel, or flanges of equivalent material; and all such flanges shall have a depth through the bore of not less than that equal to one-half of the diameter of the pipe to which any such flange may be attached; and such bores shall taper slightly outwardly toward the face of the flanges; and the ends of such pipes shall be enlarged to fit the bore of the flanges, and they shall

boiler is completed and ready for inspection, must be subjected at (the first) inspection to a hydrostatic pressure double that of the steam pressure allowed in the certificate of inspection—to take effect on and after July 1, 1897.

The use of (malleable iron or) cast steel manifolds, tees, return bends or elbows in the construction of pipe generators shall be allowed.

The coil and pipe boilers made by the following firms have been approved by the board: Charles D. Casad, Seattle, Wash.; C. B. Clark, South Brewer, Maine; Clonbrock Steam Boiler Company, Brooklyn, N. Y. (Thomas F. Morrin's improved boiler); B. F. Cook, Fort Pierce, Fla.; Detroit Water Tube Boiler Company, Detroit, Mich. (the Acme boiler); W. E. Dickey, New York, N. Y. (porcupine boiler); Gordon H. Hardie, Victoria, British Columbia; Charles H. Kimball, Plattsburg, N. Y. (Kaelma boiler); New York Shipbuilding Company, Camden, N. J.; James E. Orme and Henry H. Orme, St. Paul, Minn.; A. L. Rhodes, West Superior, Wis.; the Schaffer Machine & Mfg. Company, Baltimore, Md.; George W. Swartz, Decatur, Ala. (porcupine boiler); John Trasher, New Orleans, La.; J. E. Vincent, Palatka, Fla. (a water tube boiler and a porcupine boiler), and George Warrington, Chicago, Ill.

At the annual meeting of the South Durham Steel & Iron Company, Limited, of Stockton-on-Tees, Sir Christopher Furness, the chairman, made the following statement: "It is estimated that on the average the coal royalties, dead rents, way leaves, &c., amount to 6 pence



per ton, and that the royalties on pig iron (that was to say, the royalties paid on coal, iron ore and limestone that enter into its manufacture) total on the average 4 shillings 6 pence per ton. At 6 pence per ton on the 380,198 tons of coal consumed the company paid in royalties £9504. And at 4 shillings 6 pence per ton on the 312,341 tons of pig iron they paid no less than £70,276, making a total for the 12 months of £79,780."

### The Shenango Valley

SHARON, PA., February 17, 1902.—It is stated that a large brass foundry will be erected at South Sharon in the near future. S. C. Koonce of Clark, Pa., and J. L. Merritt of Greenville, Pa., are named as the principal promoters of the enterprise.

The New Castle plant of the National Steel Company was to have been shut down during February for necessary repairs, but on account of the Mingo Junction plant being closed pending the passage of the smallpox epidemic, the New Castle mill will be kept in operation. Its closing would make a scarcity of billets for the tin plate plants.

J. P. Whitla of the Sharon Steel Company is at the head of a company who will erect a foundry at Wheat-



Fig. 3.—Special White Iron Casting (750 Diameters).

land, directly south of the town of South Sharon, for the purpose of supplying castings to the works of the Sharon Steel Company.

The works of the Continental Iron Company, at Wheatland, Pa., which have been idle for some time, have resumed operations in all departments. The plant has been repaired and much improved and has sufficient orders on hand to keep it running for several months. It employs 200 men.

**The Sydney Steel Products Company.**—Stock is being subscribed for a new plant to be established at Sydney, Nova Scotia, for the manufacture of wire rods. James Pender, managing director of James Pender & Co., Limited, manufacturers of wire nails, of St. John, is the promoter of the new company. The capital is to be \$500,000 and the name of the company is to be the Sydney Steel Products Company. Already the stock is being liberally taken up in St. John, where Mr. Pender's former enterprise is one of the soundest and best paying institutions of the city. Mr. Pender's lifelong identification with the manufacture of wire nails and horse nails renders him peculiarly adapted for the position of manager of the new concern.

## Metallography in Car Wheel Manufacture.

BY ASA W. WHITNEY, PHILADELPHIA, PA.

In a recent issue of *The Iron Age* William Fawcett presents views in regard to "The Necessity of the Betterment of the Chilled Cast Iron Car Wheel," hinting at the long threatened but never accomplished supremacy of the steel wheel, which, however, even in foreign countries has had to yield some ground.

It is indeed fortunate that in the strong, but soft, heavy and expensive steel wheel we have a safeguard as against degeneration of the cast iron wheel, and an incentive in the greater uniformity of steel to the adoption of at least as much metallurgical science to chilled iron as has been applied to steel.

The more profoundly the field of the "iron-carbon" series is studied with modern facilities the more practically important become the relations, chemical and structural, between all its commercial gradations. In this connection I would urgently refer all iron founders to Prof. H. M. Howe's able summary of this matter, en-



Fig. 4.—End View of Small Chilled Tooth (110 Diameters).

titled "Constitution of Cast Iron," practically closing the last Franklin Institute "Discussion on Cast Iron," January, 1901 (American Institute of Mining Engineers, Vol. 1901), reprinted in the *Metallographist* of July, 1901.

While noting an obvious excuse for bad wheels, Mr. Fawcett appears to put undue emphasis on his limits for sulphur and phosphorus. I know that many excellent wheels are made with sulphur as high as 0.10 per cent., and as much as 0.40 per cent. phosphorus is compatible (the composition being in other respects properly adjusted) with superior strength and service. A lower limit for either of these elements is, of course, no sufficient assurance of high quality. In fact, the percentage of scrap wheel in a mixture is no safe criterion of the quality of the product, or of the extent of the crime ascribed to wheel founders in justly appreciating the convenience and economy of a metal more uniform than most pig iron. Its kind of variations, moreover, can be better estimated by fracture.

On the other hand, Charles V. Slocum, commenting on Mr. Fawcett's views (*The Iron Age*, January 16, 1902), says: "I will defy any one to make an absolutely satisfactory cast iron wheel without at least a portion of old wheels." This promised defiance and its basis is, however, too late for

discussion, as the matter is a question of fact. For against such merely negative statement I have to say that while even with the aid of some chemistry the attempt by others may have failed, yet during a period when the old wheel was relatively high in price I used almost none for some time, and finally, in order to prove the efficiency of my methods, I made a heat without a particle of wheel or hard scrap or cupola return of any description and without charcoal iron or steel. The wheels were well chilled and absolutely satisfactory, and the analysis of a test piece was normal. Under similar conditions of the market, this experience can be repeated as far as convenient.

It is because of the present status of the chilled wheel, in spite of margins of variations wholly unendurable in the range of steel, that I can heartily indorse Mr. Slocum's belief in its future.

As hinted above, the wheel maker must begin to study the structures of his product by means of metallography, just as many steel men are now doing with great advantage to their product. The steel men were first in applying chemistry, and are therefore first

about  $1\frac{1}{2}$  inches thick. Ferrite, graphite and great excess of phosphide areas, such as shown in center of field.

These samples are selected from a large number as most suitable for reproduction in ink. They give little idea, however, of the vivid reality observed by means of this practical method of test. Practically a new appreciation of metallurgy is available.

The terms used above are incident to this new development, and are structural rather than chemical.

### New Launch Electric Motor.

The  $\frac{1}{2}$  horse-power electric motor recently designed by the Holtzer-Cabot Electric Company of Brookline, Mass., is intended especially for launch work. It is entirely inclosed, being practically moisture proof. If the motor is well protected, or is to be used in fresh water, the weight is materially decreased by the use of aluminum in parts where other metals are not necessary for electrical or magnetic purposes; although, if the motor is likely to be exposed to the salt water brass or iron fittings are employed, because of the corrosive action of



Fig. 5.—Center of 2-Inch Gray Iron Test Bar (750 Diameters).



Fig. 6.—Weak Cast Iron Water Pipe (750 Diameters).

in metallography, a science which explains many mysteries of chemistry.

Few founders realize the fact that it is now possible to see, with greater distinctness than can be reproduced here, great detail of structure in any metal. In the case of cast irons or steels, 10 to 20 minutes usually suffices to prepare a sample for examination. Its photo-micrograph can then be conveniently made.

The accompanying photo-micrographs, made by the writer from irons whose analysis or history is known, are as follows:

No. 1. 750 diameters. Wheel metal. Center of 2-inch square test bar. Consists of graphite, perlite and ferrite.

No. 2. 110 diameters. Another wheel metal,  $\frac{1}{4}$  inch below surface of tread, side view. Cementite and perlite. (Practically a steel hardened by suitably arranged masses of the hard carbide  $Fe_3C$ .)

No. 3. 750 diameters. An extremely hard, special white iron casting. Calculation from analysis predicted 57 per cent. to be cementite, which agrees well with the photograph.

No. 4. 110 diameters. End view of small chilled tooth of a chilled grinder.

No. 5. 750 diameters. Center of 2-inch diameter close gray iron test bar of 37,000 pounds tensile strength after turning to 1 inch area. Excellent finishing quality. Perlite, graphite, ferrite, the latter showing some excess of phosphides.

No. 6. 750 diameters. Very bad, weak, cast iron water pipe

the water upon the aluminum. In the latter case the finished parts of the machine are copper plated for the same reason. The shape of the frame is such that two equal parts are provided for the magnetic flux, one on either side of the armature, a design which allows of great compactness.

The brush holder used with these motors is of the box type, with parallel feed, making it possible to run the motor for a long period of time without any attention to the brushes. A special form of brush is used, consisting of stratifications of woven copper gauze and carbon, the outside layers being of the latter substance with a heavy copper plate. In this way are secured the advantages of the high conductivity of the copper and the wearing qualities of the carbon; the latter also preventing the copper gauze from spreading out and sticking in the holder. A continuous metallic circuit is maintained between the brush and the holder, so that no sliding or imperfect contacts are required to carry current. This makes an efficient brush arrangement for work of this kind, allowing long wear with minimum attention and making heat losses due to the flow of the current insignificant.

The speed is 1000 revolutions per minute, and as the



machines are series wound, they use field energy only in proportion to the load, thus modifying two of the most important sources of waste—namely, friction and heat losses in the windings. The voltage is usually low, from 20 to 40 being ample in most cases, so that there is no possible chance of injury to the operator. The motor is usually supported in the stern of the boat by means of heavy braces, which are bolted to the body of the motor.

## Canadian News.

### Tariff Possibilities.

The Dominion Parliament met on the 13th inst. in a session that does not promise to be particularly long or productive. In the speech from the Throne some legislation affecting trade is foreshadowed. It is proposed to increase the number of the Government commercial agencies abroad and to arrange for a direct steamship service between Canada and South Africa. Parliament is also informed that the Governments of Australia and New Zealand have accepted the invitation of the Canadian Government to join in a conference, to be held in London, England, next June, for the consideration of trade, transportation, cable and other matters of inter-colonial concern. No reference is made to the tariff. But there are certain to be numerous deputations in Ottawa during the session, following in the wake of that sent down two or three weeks ago by the Canadian Manufacturers' Association.

Tariff revision along the lines suggested by the Canadian Manufacturers' Association is hardly to be expected. Increased duty on agricultural machinery would not be forgiven in the West. Both Manitoba and the Territories would like to see the duty abolished on all articles used in farm economy, but particularly on harvest machines, threshers and the whole class usually described as farm implements. In these lines the West is solid for free trade. Already the importations under this head are large, and will increase with the expansion of settlement and the continuance of such crop conditions as the country had last year. In the fiscal year ending with last June, there were imported, mostly from the United States, agricultural implements to the value of \$1,927,814. The tremendous crop taken off last year will be a stimulus to greater farming operations next year, and at the same time furnish the means for increasing plant to the required dimensions.

A duty on steel rails, as urged, would perhaps not yet be considered good policy even by a Government committed to the principle of protection. While it is understood that the Clergue Works are almost ready to turn out rails on a large scale, and the Dominion Iron & Steel Company are expected to be manufacturing rails in 1903, there is an immediate demand which cannot be delayed by any shortage in the home supply. Railway extension means the spreading out of all kinds of production, the general development of new country, in short. This general development cannot be retarded by backwardness in the state of any particular industry. Rails are likely to remain on the free list. Last fiscal year there were imported steel rails to the value of \$3,329,919, chiefly from the United States.

That the Government is not inclining more to protection may be inferred from a change that has just been made in the tariff on paper. By order in Council it has reduced the duty on printing paper, valued at not more than 2½ cents, from 25 to 15 per cent. ad valorem. This action was taken under authority of a section of the Tariff act, which empowers the Government to reduce or abolish the duty on any kind of article of which the price in Canada is kept up by a "combine." The Canadian Press Association complained that the Canadian Paper Makers' Association constituted such a combine. A judicial investigation was ordered by the Government. The commissioner appointed to make it reported that he found the charge to be true, and the Government inflicted the penalty above mentioned—that is, it struck off 40 per cent. of the duty. This augurs ill for further protection against United States industries.

John Charlton, M. P., a member of the Joint High Commission, which has in hand the business of har-

monizing differences between the United States and Canada, has given notice in the House of the following motion:

"That this House is of the opinion that Canadian import duties should be arranged upon the principle of reciprocity in trade conditions, so far as may be consistent with Canadian interests; that a rebate of not less than 40 per cent. of amount of duties imposed should be made upon dutiable imports from nations or countries admitting Canadian natural products into their markets free of duty; and that the scale of Canadian duties should be sufficiently high to avoid inflicting injury upon Canadian interests in cases where a rebate of 40 per cent. or more shall be made under the conditions aforesaid."

Mr. Charlton has recently attracted some attention by his addresses delivered in one or two American cities, on the question of reciprocity between the United States and Canada.

### Aid to Shipbuilding.

Hon. J. Israel Tarte, Canadian Minister of Public Works, delivered an important address at the last monthly meeting of the Reform Club in Montreal. Transportation was his theme. One sentence in his speech was this: "If I were a private member of Parliament, I would say it was the duty of the Government to encourage Canadian shipbuilding, just as we have encouraged the manufacture of iron and steel."

G. B. Hunter of Swan, Hunter & Co., shipbuilders at Newcastle-on-Tyne, has completed his present investigations into the conditions for steel shipbuilding in Canada. Interviewed on the subject, he said:

"From the nature of things, steel shipbuilding can be done in Canada cheaper than anywhere else in the world. No country in the future will be able to compete with Canada, neither England nor Germany nor the United States. At present, however, the steel necessary for the construction of steel ships is not produced in Canada. In this industry steel plates and bars are required, and as they are not manufactured in Canada they would have to be imported from England or Germany. This would necessarily be a heavy handicap if an industry of this character were started at the present time. There is, however, the probability of steel for shipbuilding purposes being manufactured in Nova Scotia in the future, but at present there is no such plant in existence. It seems to me to be clearly necessary for the Government to aid the industry at the start. At present there is legislative encouragement ranging from \$1.15 to \$1.55 per ton on the building of steel ships in Canada. In view of the disabilities which the industry would suffer in its early stages, I am of the opinion that it would be necessary to raise the legislative encouragement to about \$5 per ton in order to equalize the situation with that prevailing in Great Britain, Germany and the United States. With this aid stipulated, a steel shipbuilding industry can be established in Canada on a successful basis."

There is some indication that the Government is developing a policy which has two or three objects in its scope. It has assisted the steel industry until that is developed up to the point of manufacturing ship plates and steel rails. So one problem is how to help through their early stages the industries making these products. The steel rails part of the question has been solved, at least in part, by giving them contracts to supply rails for Government roads at good prices. A similar mode may be adopted for assisting the steel plate industry. This would involve assistance of some kind to a shipbuilding industry, for ship plates cannot be used without shipyards. So here is a second object of policy which Hon. Mr. Tarte's words would lead us to suppose the Government to be contemplating. Still another is the securing of a fast Atlantic service, which the Canadian people have been calling for and the Canadian Government trying to secure for several years. There seems reason to believe that the Government proposes to assist home shipbuilding interests by giving them the contract to build a fleet of fast liners costing somewhere between \$7,000,000 and \$10,000,000, and that with that view it has led English shipbuilders to look into the prospects for establishing branch works in Canada. But

the interest taken by Sir Christopher Furness and Swan, Hunter & Co. may have been elicited solely by the bounty offered by the Nova Scotia Government and the inducements held out by several Nova Scotia towns, including Halifax and Sydney.

#### Work at Copper Cliff.

W. E. H. Carter, secretary of the Ontario Bureau of Mines, who has been touring the mining districts of Northern Ontario, has sent in a report to the bureau resulting from his investigation of the Canadian Copper Company's properties near Sudbury. He explored the Creighton Mine, where there is a surface outcrop 1100 feet long by 400 feet wide, which a shaft 60 feet deep shows to be entirely clean ore. Between 500 and 600 tons of ore are raised daily and sent to the smelters at Copper Cliff. Six of the company's mines are now in operation, but part of the smelting plant has been shut down temporarily for want of coke, a want which is hampering mining operations generally, and which is due to a scarcity of cars. New roast beds are being prepared. There are now 37 heaps in the new yards, and the same number in the old yards.

#### Minor Notes.

The "Montreal" was launched from the Bertram Shipyards in Toronto several days ago. She is a beautiful vessel, and will be one of the finest in the Richelieu & Ontario Navigation Company's fleet. She is 340 feet long, and her machinery consists of a three-cylinder, three-crank, inclined triple expansion engine, the cylinders being 32, 53 and 88 inches in diameter. In the evening a banquet was given by the Bertrams in honor of the officers of the Richelieu & Ontario Company, the leading public men and business men of Toronto being present. Nearly all the speakers favored a Government policy for promoting the shipbuilding and marine interests of Canada.

The Consolidated Copper Company of Parry Sound have been incorporated with a capital stock of \$5,000,000.

The Canadian Department of Trade and Commerce has received a letter from a business man in Yokohama, suggesting the possibility of opening up a trade with Japan in Canadian pig and sheet lead.

Toronto manufacturers are memorializing the Ontario Legislature on the subject of exempting machinery from municipal taxation. At present exemption cannot be secured except when approved by a majority of two-thirds of the ratepayers voting. The Manufacturers' Association asks that the power of exemption be vested in the town or city Council, and be made conditional upon a two-thirds vote of that body.

Respecting the new steel made at the Dominion Iron & Steel Company's works, David Baker, general superintendent, is reported as saying: "We made a perfect billet of steel without a single flaw at our first roll and every roll since has been equally good. In fact, the mill is working as steadily as if it had been operated for years, and I have never seen finer steel blooms in all my experience in the best plants in the United States."

Both the Dominion Coal Company and the Nova Scotia Steel & Coal Company have applied to the Harbor Commission, at Quebec, for space on the Louise Embankment to carry on a large coal business at that port.

A. C. Henry, the general purchasing agent of the Canadian Pacific Railway Company, died on the 3d inst. A statement lately given out by the company shows that since 1884 he made purchases for the system amounting to \$102,000,000.

C. A. C. J.

A good deal of amusement is afforded by a perusal of the foreign daily and financial press. Mr. Schwab, of course, has been engaged in all sorts of preposterous enterprises, chief of which is an international steel trust. But the American correspondents, real or fictitious, add their contributions. Among them we note that dispatches sent to Berlin and to Vienna announce that it is proposed by the Government of the United States to suspend the duties on iron and steel while the present scarcity lasts.

The Hecla Coke Company, Pittsburgh, have let a contract for 300 beehive ovens in the Connellsville region.

## The German Iron Syndicates and the Industrial Crisis.

BY OUR GERMAN CORRESPONDENT.

ESSEN, February 1, 1902.—The course of the industrial crisis in Germany which now seems to be making a turn for the better, has been relatively a favorable one. This is attributed to the circumstance that the industrial undertakings have very largely used the times of high prices to strengthen themselves financially; but it must be also attributed more particularly to the existing syndicates which have developed a potent activity in the industrial branches which interest the readers of *The Iron Age*. There is no longer any doubt in those circles which are familiar with industrial conditions that it is due largely to the moderating influence particularly of the Rhenish Westphalian Coal Syndicate that our past boom has lasted as long as it did. The syndicates have shown their ability to meet the further requirement of checking the reaction by keeping a firm hold on all the influences at play and to stop reckless competition. They have prevented an utter collapse. It is due solely to their action that an unprecedented drop in prices and a destructive competitive struggle have been avoided, developments which in former times seemed inseparable from an industrial reaction.

The coal syndicate, the coke syndicate and the pig iron syndicate have strictly adhered to contract prices. It is true that the coke and pig iron syndicates have accorded relief by making new compensating contracts at materially lower prices with consumers, and then have charged for current deliveries the average price resulting therefrom. Many have reproached them with obstinately adhering to the contracts made. Others have urged, on the other hand, that if these syndicates had granted further concessions then the selling prices of finished products would have been further depressed by competition. The steel syndicate and the beam association have made allowances on old contracts closed at high prices, and all the syndicates have extended the time for delivery upon the request of the buyer, because an almost total cessation of business occurred at times as the result of the extraordinary decline in home consumption. It was only by increased exports that the mills were in the position to keep in operation to a certain extent. In view of the prevailing state of affairs in the world's markets the export on the part of the German works was only possible with serious pecuniary sacrifices, and in this the syndicates very materially helped the mills to bear the necessary losses by arranging for export bounties. Bounties up to 20 marks per ton were paid by the plate syndicate, the wire rod syndicate, assisted by the coal, coke, pig iron and steel syndicates, when the mills could prove that their product was shipped abroad. Export premiums in amounts corresponding to the circumstances were also accorded for other products; for instance, bars, sheets, bands, &c. With what success this was carried through is shown by the export statistics of the German Empire. In the year 1901 there were exported in the form of iron and iron products 2,347,241 metric tons, as compared with 1,548,557 tons in 1900 and 1,509,886 tons in 1899. This shows an increase as compared with 1900 of 789,683 tons and as compared with 1899 an increase of 837,354 tons. It was particularly in the products enumerated above that a marked increase in the exports took place. These were as follows:

Exports of Finished Iron and Steel by Germany.—Metric Tons.

	1901.	1900.	1899.
Angles, &c.....	342,447	215,641	221,165
Bars, &c.....	329,513	172,583	193,933
Plates and sheets.....	255,627	167,363	150,239
Drawn wire.....	154,285	94,074	92,251
Galvanized wire.....	93,473	75,765	62,087
Wire nails.....	54,477	46,906	51,997

The syndicates have aided the export of surplus products and continue to do so. They have adjusted production to the demand by arranging for restriction of output. In this manner they have cleared the path for an improvement in the industrial affairs of Ger-



many, and it was only through the existence of the syndicates that this was made possible.

A clear conception of the activity of the syndicates is furnished by the data presented below for restriction of output in the different branches and by the figures just quoted of the development of the German export iron trade.

In the year 1901 the total tonnage entitled to allotment of the mines of the Rhenish Westphalian Coal Syndicate amounted to 57,172,824 tons, an increase of over 3,000,000 tons over the preceding year. The quantity mined was 50,411,926 tons, which shows that there was a restriction of output of 6,760,898 tons, or 11.83 per cent. During the second half of the year alone the production was 25,330,234 tons, or a reduction of 14.46 per cent., while a tonnage of 29,622,083 tons was entitled to participation in 1900. The restriction was 4.34 per cent., and the total quantity mined by the syndicate was 52,080,898 tons, so that there is a reduction as compared with the previous year of only 3 per cent. The total output of all the collieries in the Ruhr basin has only fallen off 1 per cent. as compared with the previous year because the mines not belonging to the syndicate, which represent about 14 per cent. of the product, were enabled to show an increase of deliveries. By underselling the syndicate they actually increased their output as much as 6 per cent. as compared with the previous year.

The deliveries of coking coal and the production of coke were even more seriously affected than those of the coal mines by the very rapid decline in the requirement of the iron industry. The largest restriction of output which the coke syndicate has demanded of its members is 33.13 per cent., yet the actual restriction to the end of the year did not go beyond 30 per cent. The total deliveries of coke on the part of the syndicate were 6,833,567 tons in 1901, as compared with 7,786,347 tons in 1900.

The production of the blast furnaces receded from 8,520,540 tons in 1900 to 7,785,887 tons in 1901, which is equivalent to 5.1 per cent. We have no data relative to the production of the individual pig iron syndicates, but an approximate estimate of the reductions in output may be arrived at by separating the individual districts. Probably the production of the outside furnaces which generally work up their own pig iron has been restricted in quite a similar manner.

The production of pig iron was as follows:

	1900.	1901.	Percentage decrease in 1901.
Rhenish Westphalia without Saar and Siegen:			
Pig Iron Syndicate, Dusseldorf..	3,270,273	3,014,844	7.8
Siegen District and Lahn:			
Siegen Syndicate.....	739,895	634,712	14.2
Silesia and Pomerania:			
Silesian Syndicate.....	847,648	762,843	14.7
Kingdom of Saxony.....	25,598	20,942	18.3
Hanover and Brunswick.....	344,012	341,985	0.6
Bavaria, Wurttemberg and Thuringen .....	143,777	113,813	21
Saar District, Lorraine and Luxembourg:			
Luxembourg Pig Iron Comptoir..	3,051,539	2,896,748	5

It cannot be denied that the activity of the syndicates has certain drawbacks, but these temporary disadvantages to individual concerns or certain groups which are due to the course of the syndicate are counterbalanced by far by the advantages accruing to the overwhelming majority of the companies and the industrial situation in general. The faults which still are evident will disappear more and more as the syndicate system develops and expands. It will be found possible to substitute for lawless production and unbridled competition order and regularity, beneficial both to capital and to labor.

The drawbacks of the present system of syndicates are not alone the outgrowth of errors in organization. Syndicates of this type may fail if they are not in a position to correctly appreciate the situation of the market. It is true that it is practically impossible to judge without making an error. It is only in a certain degree that the conditions of the market may be judged or the demand and the capacity of consumption may be

gauged. It is probably a fact that the chief reason for a sudden check in the deliveries is that the different groups of an industry do not sufficiently keep in touch with one another. It does not suffice that those interested in a certain branch of production meet, exchange experiences and act accordingly. On the contrary, one condition of a high type of industrial order is that the industrial groups aim at co-operation. It is true that within the different syndicates facts are gathered, but they do not come within the knowledge of other associations. Although without a doubt there are purely internal questions for each syndicate, it cannot be denied on the other hand that they collect material of very great general value. This should become the common property of all syndicates, and those branches of industry which have not yet been syndicated, but which are aiming at such an end, should be able to benefit from experience made by others for the sake of the common welfare.

As yet co-operation is coupled with serious difficulties. Knowledge as to existing syndicates, their management, their laws, &c., is only partially known in industrial circles, and is certainly not adequately appreciated. Recently in Germany the attacks on the industrial syndicates have become more numerous. The Central Association of German Merchants and Industrials, which is a free trade organization, has proposed to the Reichstag to place the syndicates under the supervision of the authorities of the Empire. During the proceedings of the commission of the Reichstag on the new tariff law attacks are being made on all sides on the part of people whose judgment is not troubled by any knowledge of the subject. If this tendency adverse to the syndicates should assume a more serious phase I shall take occasion to refer to it in the future.

#### The Carpenter Steel Company's Industrial Railway.

—A railway has been constructed for the Carpenter Steel Company of Reading, Pa., in order to facilitate the handling of fuel, billets, rods and other mill products and supplies in an economic manner. The track, which is 24-inch gauge, entirely encircles the plant, and is so arranged with switches, turntables, &c., as to reach all departments of the works, railroad sidings and coal chutes. The railway is equipped as follows: Two electric locomotives, constructed by the General Electric Company, of following specifications each: Voltage, 250; speed, 6 miles per hour; draw bar pull, 1200 pounds; weight, 9000 to 10,000 pounds; motors, two 12 horsepower. There is also a full line of coal dump cars and flats for other hauling. The current for the operation of the work is generated by a 33-kw. motor generator set, consisting of one 40 horse-power two-phase induction motor, directly connected by flexible coupling to and mounted on a common base with a 33-kw. direct current generator of 250 volts, also of General Electric Company manufacture. The railway was designed and constructed by the Carpenter Steel Company, with the assistance of Long & Banghart, electrical engineers of the Metropolitan Electric Company, Reading, Pa., who developed the entire electric part of the plan. The Reading Electric Company of Reading, Pa., were contractors of the electric wiring. All track was laid by the regular force at the works under the direction of the engineering department, and consists of 30-pound steel rail with 4 x 6 inch sills; all switches are after Pennsylvania Railroad standard type. The alternating current used to operate the induction motor driving the 33-kw. generator is supplied by the Metropolitan Electric Company of Reading, Pa., on a meter basis.

**The Continuous Scale.**—The report referring to an agreement made between the Amalgamated Association, the American Steel Hoop Company and the Republic Iron & Steel Company to operate the mills of these concerns continuously, pending an adjustment of the wage scale this summer, is incorrect, in so far as it relates to the American Steel Hoop Company.

The *Commercial and Financial Chronicle* reports that gross railroad earnings for January, 1902, show a gain of 7.61 per cent. over those of January, 1901.

# The Iron Age

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## The Report of the Federal Industrial Commission.

The Industrial Commission which expired by limitation a few days since was created under the Congressional act of June 18, 1898, and instructed to "collate information and to consider and recommend legislation to meet the problems presented by labor, agriculture and capital."

The final installment of the report of the Commission is devoted to labor, immigration and taxation, with a brief section devoted to irrigation of arid lands. In many respects the questions dealt with are of a highly controversial nature, and the report of the Commission is not entirely satisfactory. Indeed there is evidence that the latest information obtained was not thoroughly digested by the Commission, and even the specific recommendations for legislative action on the various subjects considered lack directness and force. Not a few exceptions have been taken to some of the conclusions of the Commission upon the labor question, especially those which seem to condone, if not actually to favor, the "boycotting" system. Criticism also has been showered upon the recommendations for Federal legislation against the use of armed private guards for property threatened by strikers.

Among other recommendations the Commission proposes an annual franchise tax to be imposed by the Federal Government upon all State corporations engaged in interstate commerce, calculated upon the gross earnings of each corporation from the interstate business. The minimum rate of such tax to be low, but to be gradually increased, dependent upon earnings. Accompanying this proposal is a recommendation to establish a bureau of publicity in the Treasury Department charged with the duty of registering all State corporations engaged in interstate or foreign commerce; to obtain all information needed to enable the Government to levy the tax with justice and collect the funds; to inspect the business and accounts of such corporations and to enforce penalties against delinquents.

The result of these provisions, if enacted and enforced, will be to put industrial and other combinations under supervision similar to that now exercised by the Interstate Commerce Commission over the railroads.

Whether it is expedient or not to place all corporations under control as planned, it is not clear why a franchise tax should be levied, other than to defray the expenses of the proposed bureau, especially at a time when ways and means are being devised to cut down the surplus revenue of the Government. But even if a tax were needed and levied the gross earnings of a corporation would hardly be an equitable basis upon which to impose the tax; gross earnings do not necessarily reflect the profits accruing to a business.

In generalizing upon the subject of labor and the development of manufactures the Commission is of the opinion that beneficial results may come from trades union organizations wisely administered, but it deprecates the shortsighted methods exercised by some

unions to improve the conditions of the members. The Commission asserts that the high productivity of our industries at the present time is due, in part, to the superior methods and machinery used, but also in no small degree to the greater energy and skill of the American as compared with the foreign laborer; and "the more generally and effectively the manual labor of the world is aided and directed by brain the higher is its efficiency; and the more generally machinery can be made to reinforce producers and distributors of wealth the higher is the efficiency of wealth production."

While these remarks are trite, they are none the less sound, and reveal the economic principles upon which American industrial supremacy is founded, and are peculiarly and particularly applicable to the iron and steel industry. The piece work or contract system, which is permitted, nay encouraged, in many American shops, stimulates the men to best endeavors, and has given birth many times to new ideas which have resulted over and over again in improved tools and many labor saving devices, increasing the profits of employer and employee alike.

It being evident that the superiority of the American workingman arises from the development of vigorous individualism, it is not surprising the Commission should recommend that the workman be left untrammelled, and as continued long hours at work are apt to detract from his efficiency, it is but natural the Commission should seek to protect his welfare while deprecating the methods of some unions to obtain this end.

## Mathias Baldwin and the American Locomotive.

On the 27th Inst. the management of the Baldwin Locomotive Works of Philadelphia will celebrate the seventieth anniversary of their existence as an industry and the completion of the twenty-thousandth locomotive turned out by them. In anticipation of this unusually interesting occasion a brief review of the steps by which the modern locomotive has been evolved from the primitive type of traction engine which this country inherited from Great Britain will be of interest to our readers. As a history of the Baldwin Locomotive Works is in the best sense a history of the American locomotive, to follow the steps of their development from small beginnings to their present controlling importance will serve the purpose of this sketch.

The Baldwin Locomotive Works began with the inception of railroading on this side of the Atlantic. Their founder, Mathias W. Baldwin, was a jeweler, but saw better opportunities for profit in the manufacture of book binders' tools and cylinders for calico printing. This led him to design an engine for the power required in running his machine shop, and his first upright engine was so successful that it brought him many orders and gradually changed the character of his business from special lines to general engineering. It is interesting that Baldwin's engine, built in 1830, is still preserved intact. It supplied power for six departments of the locomotive plant as they were successively opened, and is still in good order.

About this time the use of steam as a motive power for long distance transportation had begun to attract the attention of American engineers. Some locomotives had been imported from England and one had been built at the West Point Foundry, in New York, which was not altogether successful for the purpose for which it was designed. As the locomotive was then a matter of great public interest and curiosity, Franklin Peale of the Philadelphia Museum applied to Mr. Baldwin, as a skilled mechanic, to construct a miniature locomotive



for exhibition. The result of this order was a locomotive capable of drawing two cars with seats for four passengers, which was set to work on a circular wooden track shod with hoop iron in Peale's Museum, and attracted much notice. This called attention to Mr. Baldwin as an ingenious and clever mechanic, and brought him an order from the Philadelphia, Germantown & Norristown Railroad for a locomotive, to replace horses for car traction. His only guide in design was an examination of the parts of an English locomotive imported some time before by the Camden & Amboy Railroad, but not used up to that time, and his experience in building the model for Peale's Museum. The difficulties encountered in this work were very serious. There were no machine tools available, and the cylinders had to be turned by means of chisels fixed in blocks of wood and revolved by hand. For the reason that mechanics capable of doing the work required were not to be had, Mr. Baldwin was under the necessity of doing most of the work himself, of educating the workmen he needed to employ and of devising most of the tools for his several operations. It is calculated to impress the reader with the suddenness of mechanical development, that all this is easily within the memory of living men.

Baldwin's first practical locomotive was finished and tested November 23, 1832. It was named "Old Ironsides," and was successful. Of course it had some defects, which were afterward remedied, but it was put immediately to work and continued in service for over 20 years. It was a four-wheeled engine, weighing 5 tons. The cylinders were  $9\frac{1}{2}$  inches diameter, and the stroke 18 inches. The frame was of wood, built outside the driving wheels, which had cast iron hubs, wooden spokes and rims and wrought iron tires. The boiler was 31 inches in diameter and contained 72 copper flues 7 feet long and  $1\frac{1}{2}$  inches diameter. The valve motion was given by a single loose eccentric for each cylinder, placed on the axle between the crank and the hub of the wheel. The engine was reversed by changing the position of the eccentric on the axle by a lever operated from the foot board. The cylinders exhausted against each other. This was found objectionable and was subsequently remedied by turning the exhaust pipe of each cylinder separately into the stack, substantially as is now done. The steam joints were made with canvas and red lead, after the English practice. For this engine Mr. Baldwin received payment on a compromise of his claim, accepting \$3500. It did not fully conform to specifications, but was a remarkably good guess on the part of its ingenious builder. It was run in good weather in the regular service between Philadelphia and Germantown. In bad weather horses were used. Trials showed it capable of drawing its train at a speed of 30 miles an hour, but it was too light for the grades.

This experience brought Mr. Baldwin to the front as a locomotive builder, practically the first in this country, and his work attracted much attention from those capable of appreciating the possibilities of steam transportation. He built an engine for the Charleston & Hamburg Railroad in 1834, which was a remarkable achievement, all things considered, and showed many improvements on Stephenson's engine, built for the Mohawk & Hudson Railroad. The boiler had a high dome over the fire box and established a type which was closely followed for many years. In the same year he built a locomotive for the State road, operating a line from Philadelphia to Columbia, which was so successful that the Legislature decided to operate the road wholly by steam power. This conclusion was vindicated by the performance of Baldwin's engine in drawing 19 loaded freight cars over

the steepest grades of the road. Five locomotives were built in 1834, and the business which began with the building of a model for a museum was fairly started. More room being needed, the works removed to their present location in 1835.

Baldwin was a very capable engineer and had the valuable quality of learning wisdom from experience. Every locomotive he built was better than its predecessor, and he made many valuable inventions which are the basis of modern locomotive practice. Fourteen engines were built in 1835, 40 in 1836, the same number in 1837, 23 in 1838, 26 in 1839 and 9 in 1840. In common with most men in active business, Baldwin came to grief during the financial troubles of 1838-40, and began to feel the effects of competition. However, he weathered the storm, and when business activity was resumed was in better position to take advantage of it than any one else, as his intimate study of every detail of locomotive building had given him a valuable patent protection. From 1842 the business experienced a steady development, which identified it with the most memorable period of our national history. To follow the details of Baldwin's work in the improvement of locomotive engines would be impossible. In the early days of railroading wood was the fuel employed, and the wood burning type of engine continued in use until 1847, when the Baltimore & Ohio Railroad ordered four engines to burn Cumberland coal. Baldwin took the order and the engines were satisfactory.

The art of locomotive building was indebted to Mr. Baldwin for so many features of value that it would be difficult to designate those of most importance; but perhaps the greatest and most permanent value resides in the practice first introduced by him in the employment of a system of standard gauges and templets. The importance of this system in securing absolute uniformity of essential parts of all engines of the same class is obvious, and without it the increased production of the works since 1861 would have been practically impossible. He also gave his best efforts to establish in practice the principle that all parts of similar engines should be absolutely uniform and interchangeable. At the present time an important department of the Baldwin Locomotive Works, having an organization of its own and a special equipment of tools and a staff of skilled workmen, is that of standard gauges. It insures an absolute uniformity and interchangeability of parts in engines of the same class, permitting an output otherwise impossible, and minimizing the cost of repairs to the customer, as well as saving a great deal of time in duplicating parts. Frames are planed and slotted to gauge and drilled to templet. Cylinders are bored and planed, and steam ports, with valves and steam chests, are finished and fitted to gauge. By the same method tires are bored, centers turned, axles finished, cross heads, guides, guide bearers, pistons, connecting rods, &c., planed, slotted or finished by the same method. Every bolt in an engine is made to a gauge, and every hole is drilled and reamed to a templet. Only exact duplicates of the standards go to the shops, consequently there is no variation due to wear. The perfection of this system is a monument to the mechanical skill and foresight of Mathias Baldwin, who died in 1863, of venerable age and crowned with honors as one of the greatest of American mechanics. Beginning with "Old Ironsides" in 1831, 30 years were covered in the building of the first thousand locomotives turned out by the Baldwin plant. Since 1861 19,000 have been built. This fact is significant when it is remembered that with the outbreak of the Civil War it was deemed so improbable that any further expansion of the railroad industry would take

place that plans were seriously considered for utilizing the facilities of the Baldwin plant for other purposes. Business judgment is probably the best judgment we have, but that it is not infallible needs no better proof than the failure of great business men to recognize the beginnings of eras of national development, concerning which *ex post facto* wisdom is much wiser than prophecy.

### A Threatened Famine in Foundry Iron?

There are indications of a buyers' scare in foundry pig iron, since apparently some consumers, large and small, are ordering iron in excess of their usual requirements, having grown nervous over the possibility that their raw material may not reach them in the quantities and at the times desired. During December, in particular, and in January, to some extent, production and deliveries were seriously interfered with, the former by a scarcity of coke and the latter by the prevailing troubles in transportation. Quite recently these distributing influences have again made themselves felt, and apparently have contributed to emphasizing the danger.

While these troubles eloquently prove how enormous is the consumption, and how closely, with the light stocks in furnace yards, we are sailing to the wind as to supply, they do not necessarily foreshadow an actual famine. With the coming of spring we may expect that the railroads will be able to do justice to the demands of the iron industry for prompt conveyance of raw materials and of products.

Production is not only likely to be less hampered in the future, but is expected to expand quite considerably. During the next few months a number of furnaces are to resume, after an idleness more or less prolonged. Among these are, in the South, Trussville, which has just started; Lady Ensley, which is to go in in April; the second Woodward, probably in the same month; Talladega and Allegheny at an early date, and No. 2 Sloss, remodeled and enlarged, in April or in May. Max Meadows in Virginia, has just blown in, Gem in Virginia and the second Middlesbrough, in Kentucky, will probably produce in April. A large new producer, the fine new furnace of the Republic Company, in the Birmingham district, will be added to the ranks in March.

In the East we have Durham, Pequest, Allentown, one Brooke and later on Cedar Point, which will all contribute their quota.

From the Central West, on the other hand, come reports that several furnaces are to swing off from foundry to basic or Bessemer iron, and it is this fact which has created some uneasiness. But it is in this great region that we may most expect an improvement in the production of the plants which have suffered most from the coke and car embargo.

The Southern producers, of course, are the largest single factor in the foundry trade, since they make nearly one-half of the entire product of the country. Their position is well illustrated by that of the eight leading interests in Alabama, Tennessee and Virginia. We understand that these concerns have in the aggregate on their books orders for 700,000 tons of foundry pig iron scattered for delivery during the year, the bulk of course for the first half. They do, however, run to the end of the year. The same furnace interests have unsold a capacity of 700,000 tons of pig iron for the balance of the year, so that, so far as the principal source of foundry iron is concerned, there is a large tonnage still available.

Unfortunately data are not available for the other

producing sections, but with such a reserve it seems somewhat hasty to conclude that there will not be pig iron enough to go around.

There remains one point to which attention should be called, and that is the possibility of importations of foreign pig iron, should prices be advanced unduly by a buyers' stampede. That this is not so remote is proven by the fact that to-day 5000 tons of No. 3 Middlesbrough foundry pig iron was purchased for importation.

It must not be forgotten either that the second half of the year will bring into the market a number of new blast furnaces. It is true that the greater number of them, either the three stacks at Clairton, Pa.; the two furnaces of the Lackawanna Company, removed from Scranton to Buffalo; the two Colorado furnaces, the new La Belle and others will serve the steel trade. But they will relieve the situation in that direction and will thus favorably influence matters in the foundry iron trade proper.

## CORRESPONDENCE.

### A Waste of Dollars.

*To the Editor:* The unquestioned superiority of American blast furnace practice over European methods, attained during 20 years of strenuous effort and by brains sharpened by the keenest competition, leaves, it would seem to a casual observer, but little more to be gained, yet this is a serious mistake.

There is a frightful waste of good American dollars running riot in smoke, running to naught because of the inattention of our furnace managers to some of the fundamental principles of thermodynamics that should be applied to the commercial economics of gain.

In the particular of the utilization of waste blast furnace gases our European compeers are ahead, both in thoughtful application of commercial and mechanical principles and in ingenious devices appertaining thereto. Why is this so? Because dear fuel and chemical skill in working up residuals have sharpened the inventive faculty of our foreign brothers. We have had superior fuel at much lower prices, and we have lacked a profitable market for residuals till now. The indications are more encouraging in this direction at present. The skill of the leading engineers of the Westinghouse Company has lately been turned toward the development of the gas engine in large units. A careful consideration of the heat factors wasted at our furnace mouths indicates possibilities of profit that must soon be grasped by discerning financiers, if the engineers are laggard.

The consumption of the waste gases in the engine cylinders of the furnace plant, instead of under its boilers, will save certainly in the proportion of 4 to 1, if not 6 to 1. Some attention has lately been directed here to these problems, aside from that of mere "suitably designed engines." The questions of handling such vast volumes of gas as are given off in an average up to date good sized blast furnace plant have taxed the ingenuity of our furnace managers. They have run up against questions of cooling, washing and dust freeing that have troubled them sorely, and the practical solution is not yet. Why have they ignored the highly trained gas engineers of the country in the handling of these problems? Let us briefly analyze the facts of the case as found in even a small blast furnace plant.

The gases are lean. Very well! They lend themselves splendidly for unusual compression, and this speeds cylinder ignition. The higher the compression the greater the economy. Trials have proven that 400 cubic feet of the waste gases are needed to realize 1 horse-power at the engine when used under boilers. A furnace making only 150 tons of foundry pig per day generates about 700,000 cubic feet of good available waste gas per hour. Only about 85 cubic feet of waste



gas are needed for 1 horse-power in a gas engine, the calorific power of the gas running from 116 to 120 British thermal units. Therefore about 8000 horse-power are available as energy at the engine. If the furnace consumes 25 per cent. of its own outgiven energy in its own mechanism, 75 per cent., or 6000 horse-power, are available for sale to the community of which this small furnace may be the center. Think of it! What a source of energy as a reaper of dollars! These figures are not exaggerations. They are absolutely realizable. This energy will pump the water, generate the electricity and move the trolleys of the town. The mechanical investment may reach, to fully effect this installation, \$500,000. Let it. It will net 20 per cent., or 10 per cent. after fuel depreciation charges when sold as cheap power off the shaft. Can this much longer be ignored? The American iron and steel industry can create new avenues of profitable investment by completing the solution of this problem, sure to be speedily won by our European engineers.

GAS ENGINEER.

NEW YORK, February 15, 1902.

#### The First Iron Works Chemist.

To the Editor: We are going so fast in the iron and steel business that we seldom look back, hence we forget where we came from.

In reference to the article on the above subject in last week's issue of *The Iron Age* by Captain Hunt, I would say that I think Father Thomas, who first smelted iron with anthracite coal in this country, at the Crane Iron Works, Catsauqua, in the Lehigh Valley, employed the first chemist in the industry in the person of Mr. Kinsey, father-in-law of President Schwab of the United States Steel Corporation, and the genial old gentleman still lives at Braddock, where he was engaged in later years. Mr. Kinsey's start at Catsauqua was so far back that I am not sure that Cambria existed at that time, and I will not say that Mr. Carnegie was still working in Blackstock's factory at \$1.25 a week. He might have got on the railroad by that time, but I do know that long after this the great Captain Jones, Mr. Hunt's friend, learned the machinist's trade in the shops of the company along with half a dozen others who have long since become prominent in the manufacture of iron and steel. Mr. Fritz and his brother were in the foundry business there about this time, and Mr. Thomas' sons were beginning their careers as ironmasters, and later in charge of the construction and operation of the renowned Thomas Iron Company.

It is a curious fact that Mr. Gayley, vice-president of the United States Steel Corporation, greatest blast furnaceman in the world, should begin his career as chemist for the Crane Iron Company as successor to Mr. Kinsey.

When in doubt about anything in this line it is well to remember that country of the blue sky where everything is scrupulously, yes, painfully clean, and where the industry was so great once that there were over 50 blast furnaces in the Lehigh and as many in the Schuylkill Valley.

H. B. A. KEISER.

CUYAHOGA FALLS, OHIO, February 15, 1902.

#### The Reading Iron Company.

At the annual meeting of the stockholders of the Reading Iron Company, held in Philadelphia, February 11, the following Board of Directors were elected: George F. Baer, F. C. Smink, J. Lowber Welsh, Jos. S. Harris and S. R. Seyfert. At a subsequent meeting of the directors, George F. Baer was elected chairman of the board and F. C. Smink president of the company. The board also adopted a resolution authorizing the officers of the company to set apart \$25,000, in such securities as they may deem prudent, to constitute a relief fund, the interest to be appropriated to the relief of the employees of the company under such terms and limitations as the

chairman and president may from time to time determine. The company have heretofore shown their interest in the relief associations at the various plants by making a contribution to a sinking fund for each of the organizations of \$5 per capita for each member in good standing, which money is invested and the income passes into the treasuries of the several associations. The adoption of this new resolution insures revenues of no inconsiderable amount in addition to those already provided for.

#### Will Move Plant to Texas Oil Regions.

The Penman Tank & Boiler Works, East Chicago, Ind., are arranging for the removal of their business to Beaumont, Texas. These works have for the past six months been running on large contracts for tanks for the Beaumont oil district and have secured additional contracts which, with the former, aggregate nearly 3,000,000 barrels capacity. The development of such a large business has caused them to look with great interest on a plan which will bring them closer to the field in which these orders originate. A charter has been secured under the laws of Texas for the incorporation of the Penman Steel & Iron Works, with an authorized capital stock of \$125,000. The Beaumont works will be erected and operated by this corporation. A tract of 20 acres has been purchased in the northern part of Beaumont, on which the works will be located. The equipment of the plant at East Chicago will be removed to the new location and will be greatly increased. The most modern machinery will be installed for handling large plates and turning out work economically and expeditiously. The works will comprise a boiler shop, tank shop, stock house and the necessary offices. They will not only have railroad connections, but will also enjoy the advantages of water transportation. The entire stock in the new company will be owned by W. H. Penman of East Chicago, H. Staitl and local Beaumont capitalists. W. H. Penman is manager of the business at East Chicago and will continue in that capacity with the new corporation. The works at Beaumont will be in operation some time during the current year, or as quickly as the removal can be completed without seriously interrupting operations at the old plant.

#### May Erect Sheet and Tin Plate Plant.

The Marietta Sheet Steel & Tin Company, a concern projected by Laken C. Taylor of Cambridge, Ohio, and others, intend building a sheet steel and tin plate plant upon a site recently secured east of Norwood, a part of Marietta, Ohio. The plant is to contain four hot mills and is to cost about \$150,000. A large tract of land, upon part of which the mills are to be located, has been purchased and will be named East Norwood. This has been arranged in plots, and according to the contracts signed with the Marietta Board of Trade, as soon as the requisite number of lots have been sold the company are to commence the erection of the mills, and 30 days after completion are to receive a bonus. If the project is successfully launched the Marietta Electric Company, whose power house is located at Norwood, are to extend their line to the new works. The Government dam, just below Marietta, the construction of which has already been provided for, will give water facilities, and running through the tract are the tracks of the Pennsylvania Railroad.

The largest electrical generators are those of 10,000 horse-power each, to be built by the General Electric Company for the Canadian plant of the Niagara Falls Power Company.

A general strike of workmen is threatened in Italy. Labor meetings on a large scale are being held in Rome and other cities and the Government has taken extraordinary military precautions to preserve order.

## OBITUARY.

FRANCIS A. PRATT.

Francis A. Pratt, former president of the Pratt & Whitney Company of Hartford, Conn., died suddenly on February 10 at his home, in that city, at the age of 75 years. Mr. Pratt had been in failing health for some little time, although, up to two years ago, when he retired from active business, he had enjoyed vigorous health. The cause of his death was an attack of apoplexy, with which he was seized while dressing for breakfast. His death removes one of the most prominent citizens of Hartford, who had been intimately connected with the industrial life of the city for nearly half a century. Francis Ashbury Pratt was born at Woodstock, Vt., on February 15, 1827. His parents, Nathaniel M. and Euphemia Nutting Pratt, were both descended from early English settlers in New England. Mr. Pratt's father was a leather merchant in Reading, Vt. When Francis A. Pratt was about eight years old his parents moved to Lowell, Mass., and as soon as old enough he was apprenticed to Warren Aldrich of Lowell to learn the machinist's trade. When 21 years old, in 1848, Mr. Pratt entered the employ of the Gloucester Machine Works, at Gloucester, Mass., and rose to the position of contractor. Four years later he went to Hartford, Conn., and secured a position with the Colt Patent Firearms Mfg. Company.

While there he formed the acquaintance of Amos Whitney, which continued in an intimate relation all through his life. These young men, recognizing the value of individual effort, left the Colt Company after about two years, and the former became the superintendent of the Phoenix Iron Works, with Mr. Whitney as his assistant. They remained in their respective positions until 1861, when they decided to go into business for themselves and formed the partnership of Pratt & Whitney, which business ultimately developed into the present extensive plant of the Pratt & Whitney Company. Monroe Stannard of New Britain, who is still connected with the Pratt & Whitney Company, was taken into partnership in 1865. In 1869, under a charter from the State, the company were incorporated, with a capital of \$350,000, which was afterward increased to \$500,000. Mr. Pratt was president of the corporation, and their leading spirit from the outset. One of the chief products of the firm was a milling machine which was designed by Mr. Pratt, and of which the company sold over 7000 during their earlier years. These machines have been distributed to all parts of the world, and the design to-day is substantially the same. Beginning with the manufacture of machine, gun and sewing machine tools, the company gradually extended

their lines. In 1893 the company were reorganized with a capital of \$3,000,000, Mr. Pratt becoming president and Mr. Whitney superintendent of the plant. Roswell F. Blodgett and Seth W. Bishop were then admitted to partnership in the concern. Mr. Pratt paid special attention to the foreign business of the company, and made as many as ten trips to Europe in their interests, selling over \$3,000,000 worth of goods in England, Germany, France, Austria and Italy. Mr. Pratt was a man of generous impulses, and was sympathetic and straightforward in his dealings with his employees and business associates. He gave his life to his business pursuits, and he had no taste or inclination for public preferment. Nevertheless, he was at one time appointed by the Secretary of the Treasury as one of a Board of Commissioners for expert examination of the

United States Treasury vaults, and he served for four years in the Hartford Board of Aldermen, as well as on the local Board of Water Commissioners. He was officially connected with many industrial corporations, and was a charter member of the American Society of Mechanical Engineers. Mr. Pratt made many valuable contributions to mechanical science, and was a recognized authority on such matters.

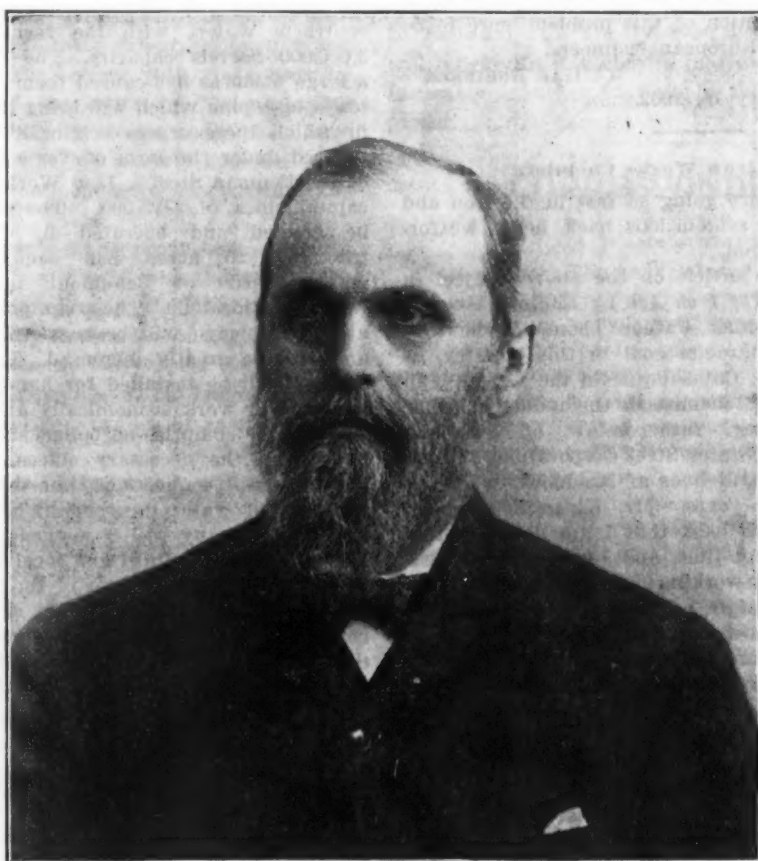
### NOTES.

WILLIAM HOPKINS, vice-president and superintendent of the Iowa Iron Works Company, Dubuque, Iowa, died from pneumonia on February 5 at his home in that city, aged 62 years. He was

born in Glasgow, Scotland, and there learned the trade of a boilermaker. In 1861 he came to America, and worked for three years in Boston, Mass., and Toronto, Canada. Going to Dubuque in 1864, he started a boiler shop in that city, subsequently joining the firm of Rouse, Hopkins & McMerchy, who later became the Iowa Iron Works Company. Mr. Hopkins was one of the most widely known manufacturers of engines, boilers and steam vessels on the Mississippi River. He patented a number of valuable devices in machinery and boiler appliances, and was most successful in building up a large business in connection with the Iowa Iron Works.

OSCAR M. BURKE, the founder and formerly president of the Lake Shore Foundry Company of Cleveland, Ohio, died on February 5 at his home in that city, at the age of 79 years. He was born in Cleveland, and had lived there most of his life, being actively connected with a number of railroad and manufacturing enterprises. In 1873 he founded the Lake Shore Foundry, now a branch of the United States Cast Iron Pipe & Foundry Company, and devoted his attention to that concern up to his retirement from business three years ago.

JOHN S. WILLIAMS, president of the Forest City Steel



FRANCIS A. PRATT.



& Iron Company of Cleveland, Ohio, died on February 7 at his home in that city, after a long sickness, aged 40 years. Mr. Williams, although of frail physique and a sufferer from chronic illness from early manhood, nevertheless succeeded in attaining a prominent position in the iron and steel manufacturing industry, and for many years was the active manager of the company of which he was the head at the time of his death.

CHRISTIAN CARR, a California pioneer and prominent among the old settlers of Chicago, died at his home in that city on the 10th inst., at the age of 79 years. For several months he had been in feeble health, and death resulted from the infirmities of age. He was born in Schleswig-Holstein, March 2, 1824. In 1848 he came to the United States, and in the following year went to California. Not long after he removed to Chicago and engaged in the hardware trade, and for many years was a prominent retail merchant, training his sons in the same vocation. At one time he and his sons were operating five hardware stores in different parts of the city.

EDWARD EVERETT QUIMBY, one of the most widely and favorably known patent experts, died at Orange, N. J., on the 17th inst. He was born in Maine 71 years since, but his family removed to this State when he was yet a boy. At a very early age he was forced to assume the business of his father, and later became the superintendent of the American Screw Company, having invented the screw machine employed therein. He was connected at various times with the most important patent cases in the country, notably those arising from the Harvey steel patents, the Bell telephone patents and the Mannesmann tube patents. In the last named matter his specifications were regarded by the Patent Office as models, and were bound and distributed as such.

## PERSONAL.

Thomas M. Moore has been appointed chief of the Machinery Department of the Louisiana Purchase Exposition. Captain David P. Jones, a retired officer of the United States Navy, is consulting mechanical engineer.

Charles M. Schwab, president of the United States Steel Corporation, arrived in New York on Sunday, by the American line steamer "St. Paul," after an absence of six weeks in England and the Continent of Europe.

A. J. Moxham has relinquished the active management of the Dominion Iron & Steel Company's plant at Sydney, C. B., in order to devote his time to his interests in the United States. Mr. Moxham will, however, remain a director of the company, and also retain the vice-presidency.

W. R. Clifton has been appointed manager of the blast furnace of the Sharon Steel Company, at Sharon, Pa., succeeding Guy R. Johnston, resigned.

James A. Brady, general sales agent of the Pressed Steel Car Company, with headquarters in New York City, has resigned and will engage in other business. W. O. Jacquette, who has been in charge of the Chicago office of this concern, succeeds Mr. Brady. C. E. Postlethwaite, who has been assistant secretary at Pittsburgh, has given up that position to become traveling representative of the Pressed Steel Car Company. His successor in the Pittsburgh office has not yet been appointed.

James B. Laughlin of Jones & Laughlins, Limited, at Pittsburgh, has presented to the Carnegie Institute in that city a canvas called "The Harbor, Antwerp."

Thomas Morrison, general superintendent of the Edgar Thompson Steel Works and blast furnace of the Carnegie Steel Company, at Bessemer, will build a residence in the East End, Pittsburgh, to cost about \$150,000. F. J. Osterling is the architect.

F. C. Smink, long general manager of the Reading Iron Company, has had his faithful service recognized by election to the presidency in succession to George F. Baer, now president of the Philadelphia & Reading Railway Company. Mr. Smink was elected at the recent meeting and at once assumed the duties. The board elected is composed of George F. Baer, F. C.

Smink, J. Lowber Welsh, J. S. Harris, and S. R. Seyfert. Mr. Smink is also one of the directors of the Pennsylvania Steel Company, New Jersey charter.

W. H. Palmer, formerly superintendent of the Tipton and Macungie furnaces, has been made superintendent of the furnaces of the Empire Iron & Steel Company.

A. E. Lewis, late of Pittsburgh, has been made superintendent of the M. H. Treadwell & Co.'s Lebanon plant. He was formerly connected with the Lewis Foundry.

Henry C. Frick of Pittsburgh has secured a controlling interest in the stock of the Citizens' National Bank, in that city.

Benjamin H. Taylor has been appointed chief engineer of the Carnegie Steel Company, to take the place of W. H. Smith, who resigned on February 1 to go with H. C. Frick.

The Standard Pneumatic Tool Company of Aurora, Ill., have appointed J. B. Wilson, formerly connected with the mechanical department of the Grand Trunk Railway, manager of the new Canadian offices which have just been opened at 103 Union Station Arcade, Toronto, Ont.

The firm of J. F. Harris of Chicago announced a change in organization to take place March 1. The business, now being carried on by John F. Harris, Samuel C. Scotten and Oliver A. Olmstead, under the firm name of J. F. Harris, will be continued by the firm of Harris, Gates & Co., composed of John F. Harris, Charles G. Gates, and Samuel C. Scotten as general partners, and Isaac L. Elwood, John Dupee, John Lambert and John W. Gates as special partners.

Homer J. Lindsay, assistant to the president of the Carnegie Steel Company, Pittsburgh, has gone to California to be absent for two months.

H. C. Frick has notified a committee of the Homestead Business Men's Association that the work of improving a plot of ground donated by him for park purposes in Homestead three years ago would be started as soon as the weather permits. H. C. Smith, formerly chief engineer of the Carnegie Steel Company, will have charge of the work.

George A. Wilson, a scrap iron dealer of Pittsburgh, has been elected a member of the Pittsburgh Stock Exchange.

James B. Ladd, consulting engineer of Philadelphia, has sailed on the "Lucania" for a visit to England and Germany. He went in the interest of the Dominion Iron & Steel Company to inspect coking and coal pressing machinery.

C. Dellwik, the inventor of the Dellwik water gas process, and representing the Dellwik-Fleischer Water Gas Syndicate of Westminster, London, is now in this country. A number of years ago Mr. Dellwik was connected as engineer with American gas works.

W. J. Arkell, for the past ten years president of the Judge Publishing Company of New York, has resigned in order to accept the presidency of the Delsel Engine Company.

The Muscadine Mining Company have filed incorporation papers at Anniston, Ala. The company are composed of T. W. Coleman, Jr.; Ross Blackman of Anniston; F. C. Mills and L. B. Miller of Cleveland, Ohio. The purpose of the company will be purchasing, mining, refining and selling iron ore. Several thousand acres of iron ore lands have been purchased. The concern are capitalized at \$100,000. Offices will be opened in a few days.

An incident which happened recently illustrates the eagerness with which manufacturers are rushing their improvements. Unable to wait until the frost is out of the ground a company decided to put up steel buildings without putting in the foundations. As soon as conditions are favorable the latter will be put into position.

### Iron and Industrial Stocks.

There has been another quiet week in iron and steel stocks, few of which displayed any noteworthy activity or showed any movement in prices. The stock of the Tennessee Company has made the largest advance. The United States Steel issues were fairly active and steady. A feeler has been put out during the past few days, the idea being broached of converting the preferred stock into a 5 per cent. bond.

The earnings of the Sloss-Sheffield Steel & Iron Company for December, 1901, were as follows: Net profits from operation, \$74,032; monthly proportion of interest and taxes, \$20,000; surplus earnings, \$54,032. Earnings were lessened by the holidays, freezing weather and lack of cars for transportation.

It is reported that J. Pierpont Morgan & Co., the managers of the syndicate which underwrote the entire stock of the steel trust, declared a dividend of 5 per cent. on the principal pledged by the syndicate. This principal amounted to \$200,000,000, although only \$25,000,000 was actually paid in. This sum was subsequently distributed, so that the 5 per cent. now declared is an actual dividend of 40 per cent. upon the amount paid in.

**Dividends.**—The Allegheny Heating Company of Allegheny, Pa., suppliers of natural gas, have declared a regular 3 per cent. quarterly dividend and an extra dividend of 5 per cent., payable February 20.

The Consolidated Lake Superior Company of Philadelphia have declared the regular quarterly dividend of 1½ per cent. on their preferred stock, payable March 15 to stock of record February 28.

### Cleveland Molders Again After More Pay.

The machinery molders of Cleveland, numbering nearly 1000, have made a request that the minimum wage scale for molders be increased from \$2.75 per day to \$3. The Cleveland molders, it will be remembered, went on strike last year for an increase to \$2.85 per day, but they eventually returned to work at the old scale. It is claimed among the union men that there are almost daily demands for men from Pennsylvania foundries, and that there the universal wage scale for a nine-hour day is \$3. Although \$3 is the minimum asked for, it is claimed that many Cleveland molders already get this figure, and some of them more, but the union desires that the minimum be fixed at that figure. It is understood that the National Founders' Association has made a reply to the request, but at this writing both parties decline to say anything about the terms of the settlement which is supposed to have been made.

**General Fire Proofing Company.**—The General Fire Proofing Company of Youngstown, Ohio, have been incorporated with a capital stock of \$500,000. The officers are Myron I. Arms, president; W. H. Foster, secretary, and W. A. Kingsley, treasurer and general manager. The new concern have purchased the business of the International Metal Lathe Company of Niles, Ohio, and the plant will be removed to Youngstown to be rebuilt on a larger scale and operated in connection with a new works, to be built by the new concern. The company will manufacture general fire proofing and the Herringbone expanded metal lath. The building to be erected will be of steel and brick and the entire plant will be completed with modern machinery throughout. W. A. Kingsley, who is treasurer and general manager, was formerly at the head of the Pomeroy Iron & Steel Company. W. H. Foster, who is secretary, holds the same position with the Youngstown Iron, Sheet & Tube Company. The General Fire Proofing Company and the Youngstown Iron, Sheet & Tube Company, although two separate and distinct concerns, will work very closely together, much of the output of the Youngstown Iron Sheet & Tube Company being consumed by the General Fire Proofing Company. Work on the new plant will be started as soon as necessary plans can be made.

The regular meeting of the Engineers' Society of Western Pennsylvania was held in Pittsburgh on Tuesday evening, February 18. A paper entitled "The

Iron Resources of Texas" was read by Professor W. B. Phillips. The annual banquet of the society will be held in the Hotel Schenley, Pittsburgh, on Friday evening, February 21.

### The Pittsburgh Shear Knife & Machine Company.

A representative of *The Iron Age* recently visited the works of the Pittsburgh Shear Knife & Machine Company, located in Pittsburgh. This concern have enlarged their plant very much in the past six months and have added a good deal of new equipment. A complete new power plant has been erected, which is contained in a steel and brick building, 25 x 40 feet in size. It is equipped with a Westinghouse motor, driven by a Harrisburg standard 120 horse-power engine, furnished by the Harrisburg Foundry & Machine Company, Harrisburg, Pa. Ample room has been provided for enlargement of the power plant as soon as it is necessary to do so. In the machine shop equipment a large number of new and heavy iron working tools have recently been added, including two planes from the Whitcomb Mfg. Company, a number of lathes from Lodge & Shipley, a Sellers tool grinder and a number of Prentice Brothers drills. The machine shop is contained in a new steel and tile building, 44 x 150 feet in size, and which is commanded by a Morgan traveling crane of 20 tons hoist. A new shear knife department is also under construction which will have modern equipment throughout and will very much enlarge the capacity of this concern in the manufacturing of shear knives. This department is expected to be ready for operation about April 1 next. Other improvements are being made to this plant and the capacity will be more than trebled.

The Pittsburgh Shear Knife & Machine Company are manufacturers of forgings, forge turned or finished complete; solid steel shear knives, steam hammers, punches and shears, galvanizing plants complete and special machinery of various kinds. In their shear department the concern are very busy and have orders at the present time for a number of heavy shears, capable of cutting 126 inches wide and ¼ inch thick. These shears are driven by 7½ horse-power electric motor. The concern have built a number of these shears for the Colorado Fuel & Iron Company, at Pueblo, Col., and also built a complete galvanizing plant. For the Colonial Steel Company, now being built at Colonia, near Pittsburgh, they are furnishing shears as described above and some other equipment. The concern are manufacturers of steam hammers from 250 pounds to 8 tons, and have facilities for making larger hammers if required. They are very busy in all departments and have already booked enough orders to keep their works running night and day for more than six months. In fact, their entire plant has been operated night and day for a long time past, so great has been the demand on the concern for their products. The officers of the Pittsburgh Shear Knife & Machine Company are Samuel Heppenstall, president, and C. W. Heppenstall, secretary and treasurer.

Joseph T. Ryerson & Son, 18 to 22 Milwaukee avenue, Chicago, have established an office at 22 and 24 State street, foot of Broadway, New York City. This has been found necessary on account of the rapidly growing Eastern business of the house, particularly on specialties in which they have built up a large trade throughout the United States and Canada, such as corrugated boiler furnaces, heavy boiler and tank power tools, hydraulic riveters, flange presses, Lennox shears, McGregor weldless boiler braces, pneumatic tools, forged flanges, air compressors, hoists, &c., as well as standard materials used for railroad shops, boiler shops and tank and sheet metal factories. The development of the business of Joseph T. Ryerson & Son has recently proceeded much more extensively than could have been anticipated only a decade ago. They have enlarged the lines which they handle, have extended their operations over such a wide territory that they have become a factor in national and even in international trade, and are now laying the foundations for still larger and more substantial growth.



## MANUFACTURING.

### Iron and Steel.

The report is officially denied that the Canton Crucible Steel Company, at Canton, Ohio, are conducting an experimental plant. The works of the concern have been in operation for some time, making crucible steel.

The new plant of the New Castle Forge & Bolt Company, at New Castle, Pa., is about completed and the concern started several rivet machines on February 17. They expect to start their chain rivets about February 20 and will have their entire plant in full operation by March 10. This concern will make bolts, rivets, chain and all kinds of forgings.

The Hecla Charcoal Iron Company have been organized at Ironton, Ohio, with a capital of \$25,000 and will lease and operate Hecla furnace, which is 53 x 10½ feet in size. The concern will manufacture cold blast charcoal iron exclusively from hanging rock limestone ores, paying particular attention to chilling qualities, and they expect to be making iron in June. The officers of the new company are E. J. Bird, Jr., president; George W. Keys, vice-president, and F. J. Horschel, secretary and treasurer.

The Youngstown Steel Casting Company, recently organized at Youngstown, Ohio, are placing contracts for the erection of their new plant in that city. They have given a contract to the Garry Iron & Steel Company of Cleveland, Ohio, for steel buildings. The main building is to be 200 x 60 feet, with a lean-to of 100 x 35 feet, to be erected complete in 90 days. They have also given a contract to the Northern Engineering Company of Cleveland, Ohio, for one 20 and two 5-ton cranes; also to the S. R. Smythe Company, engineers and contractors, Park Building, Pittsburgh, for the engineering, construction and completion of a 15-ton acid open hearth furnace with Smythe gas producers, also two Smythe annealing and two dry ovens. The Youngstown Steel Casting Company expect to place contracts this week for their engine, boiler and electrical equipment. The officers of the concern are E. E. Lawrence, president; F. B. Van Alstine, vice-president; J. W. Rodgers, secretary and treasurer, and William R. Palmer, general manager.

The Titusville Iron Company, Titusville, Pa., manufacturers of boilers, tanks, steam and gas engines, have presented to each of their employees a check equal to 5 per cent. of their individual earnings for the past year. This concern gave their men a voluntary advance of 5 per cent. in wages last winter and during the summer season allowed them a half holiday each week and full pay.

A. W. Thompson, president, G. Watson French, vice-president, and W. T. Simonton, general manager of the Republic Iron & Steel Company, visited the three plants of that concern in the Youngstown district last week. It is intimated that some important improvements and additions to equipment will be made to the works of the Republic Company at Youngstown.

The Norwalk Steel & Iron Company, who are preparing to erect a large steel works at Norwalk, Ohio, have placed contracts for boilers, steam hammers, electrical equipment and structural work. The Fort Pitt Bridge Company have the contract for the buildings. The main building is to be 100 x 460 feet and 45 feet high. The contract requires that all the steel be on the ground in four months and the buildings completed in five months.

The Pioneer Iron Company, Cleveland, Ohio, blew in their Carp Furnace on January 22.

It is reported that a number of Pittsburgh capitalists will erect a cotton tie mill in Beaumont, Texas. The idea is to make cotton ties at that point for the Southern trade and to use crude oil from the new oil fields in Texas as fuel.

The annual meeting of the stockholders of the Wheeling Iron & Steel Company was held in Wheeling, West Va., recently. Out of the total capital stock, \$3,336,800, nearly two-thirds was represented in person or by proxy. The annual statement of receipts and expenditures was reported to be satisfactory. The bonded indebtedness of the company is \$576,000, none of which is payable until September, 1904. The old Board of Directors were unanimously elected to serve for the ensuing year, as follows: C. R. Hubbard, W. F. Stifel, W. A. Isett, George K. Wheat, Edward Haslett, George Wise, J. D. Dubois, H. H. Hornbrook and A. J. Clark.

The Rocky Hollow washer of the Woodstock Iron Company, which has been in course of construction at Anniston, Ala., for the past few months, has just been put in operation. The ore is of a high quality and promises to be more abundant than was expected. Two stacks in the western part of the city of Anniston, which were originally built for a 200-ton per day capacity each, are now being converted into 300 tons capacity. The latest means of charging the furnaces is now being installed.

The report that the American Rolling Mill Company, at Middletown, Ohio, had recently bought a plant at Sandwich, Ill., is incorrect. This works was bought by the American Rolling Mill Company of Chicago. The American Rolling Mill Company of Middletown operate at that place a basic open

hearth steel plant and bar mill. They roll black and galvanized steel sheets, service pipes, sheets and sheet steel building material of all kinds. George M. Verity is president and general manager; W. T. Simpson, vice-president; R. C. Phillips, secretary, and James B. Strawbridge, general superintendent. Mr. Strawbridge was formerly connected with the Pittsburgh Tin Plate Company, at New Kensington, Pa., prior to that plant being taken over by the American Tin Plate Company.

R. S. Warner, formerly of King, Gilbert & Warner, operating a Bessemer steel plant at Columbus, Ohio, but which was taken over by the National Steel Company, who has a project under view for a large manufacturing plant at Columbus, is in California, and nothing definite will be done in the matter until he returns to Columbus, which will be some time in May.

The American Sheet Steel Company, New York City, contemplate some substantial repairs to the W. Dewees Wood plant, at McKeesport, Pa., and will replace with new mills some of the worn out machinery. The work of improvement, however, will be of a modest character.

The Toledo plant of the Shelby Steel Tube Company, Toledo, Ohio, has been closed down at the present time because the concern do not need its output, this being the dull season. The plants of the Shelby Steel Tube Company, located nearby and closer to the source of supplies, have sufficient capacity to take care of their requirements for the immediate future. As soon as demand warrants the Toledo plant will again be put in operation.

The Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, recently bought 40 acres more of land at Struthers, where their new sheet and tube mills are located. The property will be used as a site for a blast furnace and by-product coke ovens, which the concern are to build. The sheet bar mill and sheet mills of the Youngstown Iron Sheet & Tube Company were started up this week. The concern will roll iron sheets made from puddled iron.

It is stated that the project to consolidate a number of the steel casting concerns with the American Steel Casting Company has been abandoned. It was proposed to capitalize the concern at \$15,000,000, and Daniel Egan, now president of the American Steel Casting Company, was to have been president of the new and larger interest.

The William B. Pollock Company, Youngstown, Ohio, manufacturers of steel and iron plate construction for blast furnaces, steel works, &c., announce that their new plant is in operation and that they are now ready for business. The new plant is considerably larger than the old and is equipped with the most modern foundry and boiler shop appliances, including overhead traveling cranes and new tools of latest makes and largest sizes, each independently operated by motor. The company have also eight pneumatic plants for riveting, calking, chipping and drilling on work outside of the shops, and are well prepared to erect work anywhere it may be required.

On account of the strike at the Ohio Rolling Mill at Findlay, Ohio, it is understood that President William Brenner of the company has announced that the plant will be removed to Toledo.

The Toledo Furnace Company of Toledo have been incorporated with \$1,000,000 capital stock by attorneys for Pickands, Mather & Co. of Cleveland, and will erect a large blast furnace in Toledo, previous mention of the project having been made in these columns. Pickands, Mather & Co. deny the truth of the newspaper reports that the project includes the erection of a steel plant in connection with the blast furnace.

President Samuel R. Wells of the Zanesville Iron Company, Zanesville, Ohio, denies the published report that their rolling mill is to be sold and removed from that city. At a recent meeting a 10 per cent. dividend was declared and important changes and improvements for the plant were decided upon.

It is understood that W. H. Woodcock, general manager of the Structural Steel Car Company, who are erecting a steel car plant at Canton, Ohio, has completed arrangements for erection, adjoining their plant, of an open earth steel plant, to supply the steel to be used in the production of the cars, as well as for other purposes. The plant is to have two open hearth furnaces and there will be two traveling cranes of 15 tons capacity each. The company are to be incorporated under the laws of West Virginia.

The Sharon Steel Hoop Company, Sharon, Pa., manufacturers of hoops, band and cotton ties, have decided to add a basic open hearth steel plant and blooming mill, plans for which are being drawn and contracts will soon be let. The initial plant will consist of four 30-ton furnaces, the concern having decided to build small furnaces, in order to have them completed as soon as possible. The output of the plant will be about 300 tons per day, all of which will be used by Sharon Steel Hoop Company.

The St. Louis Steam Forge & Iron Works, manufacturers of car axles and every description of railroad and steamboat forgings in iron and steel, have sold the property on which their plant is now located to the St. Louis Iron Mountain & Southern Railway. The terms of sale permit nine months' time to vacate and they now have under consideration several new sites.

The Altoona Iron Company, Altoona, Pa., have increased

wages of their puddlers from \$4.50 to \$4.75 a ton. Every department of this plant is running double turn, with orders ahead for some months.

Arrangements have been made for beginning work on the excavation for the plant of the Knoxville Iron Company, between Knoxville, Tenn., and the Southern shops at Lonsdale, as soon as the weather will permit. The entire plant, when completed, will cost from \$400,000 to \$500,000. It will be completed some time during the spring or summer.

#### General Machinery.

The Rochester Machine Screw Company, Rochester, N. Y., whose plant was recently destroyed by fire, will rebuild as soon as the weather will permit. They have a good part of their machinery installed in temporary quarters and ready for use. While in a crippled state, they have offers from friends in their line to care for their orders promptly, and they hope to bridge over 90 days, when they expect to be ready to pursue business as usual.

The plan for the absorption of Fort Worth Iron Works by the Van Zandt-Claypool Machine Company of Fort Worth, Texas, has been abandoned. The Van Zandt-Claypool Company have completed the plans and specifications for their new machine and blacksmith shops. The building will be 50 x 140 feet, and has been designed for plenty of light and large radius for work, with cranes and labor saving devices.

The Aetna Foundry & Machine Company of Warren, Ohio, are preparing to erect additions to their plant. J. W. Russell is manager.

W. A. Fowlkes, Jr., Mayor of Dyersburg, Tenn., advises us that the city has voted to issue \$50,000 bonds for the purpose of buying and improving the water works and electric light plant in that city. Negotiations are now pending with F. H. Shepard, the owner, for the sale of the plants, and as soon as this has been accomplished the city will be in the market for about 675 tons of pipe, new machinery, &c.

Sheehan, Jones & Welburn, 5 Planters Block, Nashville, Tenn., recently incorporated, will shortly be in the market for a milling machine and other small tools. They have rented a shop which they have equipped with a 16-inch Bradford lathe, 14-inch Blaisdell lathe, 10-inch Johnston and 26-inch Hamilton upright drill, all of which were furnished by the Gray & Dudley Hardware Company of Nashville. The company will carry a line of printers' material, Otto gas engines, Jenney electric motors and dynamos, and Nassau Smelting & Refining Company's metals, and will remodel and repair linotype machines and other fine machinery, and build models.

Considerable new equipment will be required by Williams, White & Co. of Moline, Ill., manufacturers of forging machinery, &c., for the new machine shop they are to erect. It will be a steel structure, with 60-foot span in the center for a heavy crane, and with side bays for lighter cranes and galleries over the bays. They advise us that they have secured the boilers and engines.

The Cleveland Crane & Car Company of Cleveland, manufacturers of electric cranes, have secured a large building site at Wickliffe, 10 miles east of Cleveland, between the Lake Shore and the Nickel Plate railways, and are preparing plans for a new plant. The main building, which will be the only one erected for the present, will be 160 x 100 feet, largely of steel. Contracts for the structural work have been placed with T. H. Brooks & Co., Cleveland, and work will start at once. It is the intention to later add to the plant. All machinery will be electrically driven and a number of heavy tools will be installed. The Cleveland Crane & Car Company are capitalized at \$100,000 and the officers are as follows: W. D. Sayle, president; Charles E. Thomas, vice-president and general manager; A. L. Assmus, secretary. The company are closely identified with the Cleveland Punch & Shear Works Company, and it is stated that the latter company have also secured a building site in Wickliffe and expect eventually to erect a large plant in that place. The change will not be made for some time, however.

S. Diescher & Son, consulting engineers, Hamilton Building, Pittsburgh, are drawing plans for the new plant of the Bradley Mfg. Company, to be located in Allegheny, Pa., and which will be devoted to the manufacture of the Williams central valve engine, the Bradley Mfg. Company having secured the American rights to manufacture this engine. They will be built in sizes from 25 to 3000 horse-power. A good many special tools will be needed for the new shops and only the highest class of labor will be employed.

Charles Tyler of Baltimore, Md., has disposed of his interest in the Southern Foundry & Machine Works, Fredericksburg, Va., to John T. Dale of Chicago. A new company will be organized with increased capital to operate the plant on a larger scale and considerable new machinery will be installed. John T. Dale will be president, L. Jeff. Milbourne, secretary and treasurer, and Frank K. Tyler, assistant manager.

The smaller factory of the Red Wing Sewer Pipe Company, Red Wing, Minn., which was totally destroyed by fire recently, will be rebuilt at once. The loss was fully covered by insurance, which has been adjusted, and a large force of men are now cleaning up the plant. The company advise us that they cannot tell as yet whether the power plant has been destroyed,

but the probabilities are that it will be reinstalled, after being rebuilt.

The Marion Steam Shovel Company of Marion, Ohio, have decided to erect two large additional buildings to their plant besides those recently completed. Plans are being prepared and work will begin as soon as weather permits.

At the annual meeting of the Hendey Machine Company, Torrington, Conn., held recently, the following officers and Board of Directors were elected: Henry J. Hendey, president; Frederick F. Fuessenich, treasurer; Charles H. Alvord, secretary; Achille F. Migeon, William E. Fulton.

Libbey & Dingley, Lewiston, Maine, are in the market for complete equipment for their new power house. They have purchased the water privilege and a number of parcels of adjacent land at Deep Ribs, 2 miles above Lewiston, on the Androscoggin River, which they will develop as soon as the stage of water will permit. A stone and concrete dam will be constructed across the river and a power house erected which will provide for 10 units of about 1200 horse-power each, direct connected alternating current generators. Libbey & Dingley own the Lewiston & Auburn Electric Light Company, Auburn; the American Light & Power Company, the Lincoln Mill and Cumberland Mill, in Lewiston. This new power will be used in developing their electric lighting business in the two cities. There will, however, be something over 5000 horse-power not required, which can be secured by parties desiring to make use of it in that vicinity.

The Harloe Insulator Company, Hawley, Pa., advise us that they are in the market for machinery equipment for their new plant, contracts for which they expect to place within a few days. The company have been organized with \$150,000 capital stock, and will erect a plant at a cost of \$25,000 for the manufacture of the Harloe self tying insulators. They expect to have the plant in operation by June. Myron T. Snyder is treasurer, and Morton Harloe, inventor of the insulator, is general manager. H. B. Coho & Co., electrical engineers, 149 Broadway, New York City, will probably be the selling agents.

The Norfolk Iron Works, Norfolk, Va., have recently put in a new bolt cutter and a 96-inch radial drill press, which will improve their facilities for doing repair work, of which the marine branch is their staple. Last year was an exceedingly good business year with the house and they are continuing to have an abundance of work.

Charles M. Whitlock, Wilmington, N. C., who commenced in the supply and machinery business in 1889, and in 1893 added machine and blacksmith shops, reports having had satisfactory trade in all branches last year, but it was scarcely equal to that of 1900. In the repair department any kind of work is taken in hand.

#### Bridges and Buildings.

Charles A. Mixer, resident engineer, Rumford Falls Power Company, Rumford Falls, Maine, advises us that bids are asked until February 28 for a steel highway bridge, 170 feet long.

The Riverside Bridge Company of Martin's Ferry, Ohio, at their last meeting voted to increase their capital stock and to build an addition to their plant.

The New England Structural Company of Boston, Mass., have contracted to furnish the steel frame work, comprising 1250 tons, for the Manchester street power station of the Rhode Island Suburban Street Railway Company.

#### Foundries.

The Cureton Foundry Company of Mount Vernon, Ohio, have increased their facilities, and are prepared to handle promptly a limited amount of new work.

The Wilkes Foundry Company of Toledo have purchased a 2-acre site for their new foundry. It will be located on the Toledo Belt Railroad and Woodville street.

The Chase Pump Company of Columbus, Ohio, are receiving bids for the erection and equipment of a foundry building after plans prepared by David Riebel, Eberly Building, that city.

The Naugatuck Malleable Iron Company, Naugatuck, Conn., contemplate the erection of an addition to their plant, to be used as a core room.

The United Engineering & Foundry Company of Pittsburgh are building an addition of 100 feet to the foundry of the Frank-Kneeland Works, in that city.

The Mechanics' Foundry & Machine Company, Fall River, Mass., have moved into their new foundry, recently built, which is 94 x 56 feet, of brick and modernly equipped. They have a capacity of ten tons a day of machine and general castings. We are advised that a 50-foot addition to the length of the foundry is contemplated.

The Cuyahoga Stove Repair Company, Cleveland, Ohio, have secured a large building site on the Wheeling & Lake Erie Railway tracks, that city, and are having plans prepared for a foundry building 100 x 125 feet and one story high. It is to be built in such a manner as to admit of its being doubled in size in a short time.

The Peninsula Foundry Company, Newport News, Va., who were established about two years ago by L. J. Wright in a build-



ing which had formerly been used as a foundry and machine shop at the corner of Twenty-fourth street and Virginia avenue, have just finished erecting a new building of their own at Forty-second street, on the track of the Chesapeake & Ohio Railroad. It is composed of brick and iron, the dimensions being 200 x 75 feet. The floor space is equally divided for the making of iron and brass castings, the equipment being in every respect up to date. Castings in brass, bronze and iron of every description are undertaken. The company have cast propeller blades for the United States Government and merchant work which by actual test have shown the highest tensile strength yet attained, and they have not only equaled but exceeded the requirements of specifications in contracts with which they have been intrusted. The works are now, as they have been for a considerable period, running full time.

#### **Boilers, Engines, &c.**

The Roxford Knitting Company, Philadelphia, Pa., who are to erect a new plant at Randolph and Jefferson streets, will be in the market for a quantity of machinery, boilers, engines and other equipment as soon as specifications are completed. They inform us that it is likely that they will equip the plant with two independent units of approximately 75-kw. capacity each, using high speed engines direct connected to direct current generators, the latter being used both for power and lighting purposes. William Steele & Sons have been awarded the contract for the erection of the plant, which will include a main building, 60 x 200 feet, six stories, and a one-story dye, engine and boiler house, 30 x 170 feet. Both structures will be of brick and built on the slow burning mill construction plan, and will be equipped with all modern conveniences for the manufacture of balbriggan underwear. The total cost of the plant will be about \$150,000.

Richard Griesser, 109 Randolph street, Chicago, is preparing plans for a brewery for the Grasser & Brand Brewing Company of Toledo, Ohio. Bids are being called for on an engine, boiler, dynamo and steel kettle of 400 barrels capacity.

The Commercial Club of Dayton, Ohio, have submitted a proposition to Moran & Myers of Baltimore for the removal to Dayton of their gas engine and machinery plant.

The Ottumwa Iron Works of Ottumwa, Iowa, extensive manufacturers of mining machinery, have recently furnished and are now installing for the Chicago & Northwestern Railroad Company, at their coal mines at Buxton, Iowa, two pairs of large hoisting engines. The engines are of modern design, and are what is known as direct acting double cylinder double iron drums of the tangent Corliss bed type, with steam cylinders, 18-inch bore, 32-inch stroke; engine equipped with post brakes and balanced valves.

As soon as the frost is out of the ground the Perkins Wind Mill Company, Mishawaka, Ind., will commence the construction of two large buildings which will double the present capacity. One will be 110 x 144 feet, four stories, and will be used for the manufacture of gasoline engines, a department recently added; the other will be used as a storage room, the size of which has not yet been determined. Since taking up the manufacture of gasoline engines they have been so cramped for room that they have been able to make engines of 1½ horse-power only, but as soon as the new building is completed engines of 4 and 6 horse-power will be built. The company have recently purchased a quantity of new machinery, which, with their machine shop which they already have in operation, will be all that will be required for the present. The recent purchases include one Brainerd milling machine, one Steptoe shaper, one Putnam planer, Bardon & Oliver screw machine, ten Flatther and Draper engine lathes purchased from Pratt & Whitney Company, eight drill presses with polishing lathes, and a quantity of other small machinery.

The Massillon Iron & Steel Company, Massillon, Ohio, are building a second new power station at their plant of about 750 horse-power capacity. The contract for the engines has been awarded the Russell Engine Company of Massillon; the generators to the Northern Electrical Mfg. Company, Madison, Wis., and the boilers to the Erie City Iron Works, Erie, Pa.

The Smelser Engine Company, Frankton, Ind., recently organized, have erected a plant for the manufacture of gas and gasoline engines of from 4 to 8 horse-power, automobile and stationary types. All machinery was purchased from the Vonnegut Hardware Company of Indianapolis. The officers are James M. Smelser, president; Heaton H. King, secretary, and John Lux, treasurer.

Pickands, Mather & Co. of Cleveland, Ohio, who are preparing to erect a large blast furnace at Toledo, have placed contracts for the engines for the plant with the American Shipbuilding Company of Cleveland.

The Buckeye Engine Company of Salem, Ohio, have taken contracts for four large engines for the new plant of the Standard Steel Car Company, which is to be erected on the Ohio River between Vanport and Beaver, Pa.

The K. D. Box & Label Company, Cleveland, Ohio, have had plans prepared for a four-story factory building 150 x 50 feet. J. N. Richardson is the architect. They have been making inquiries for figures on engine and boiler.

#### **Fires.**

The Indianapolis Switch & Frog Company, Springfield, Ohio, advise us that the only loss sustained by them in the recent fire

at the East street shops was a part of their offices, which have been re-established at 76 Eastern avenue, and their business will continue without any further interruption.

The Riverside Rolling Mill, at Lima, Ohio, operated under a lease by I. N. Bedford and owned by Louis Krilling and John Anderson of Lima, was destroyed by a fire a few days ago. The loss will reach \$1000; insurance, \$2200.

The Springfield Foundry Company, Springfield, Ohio, advise us that only part of their machine shop and foundry was burned in the fire which recently destroyed the greater part of the East street plant, and they will be able to resume operations in a few days.

Gustav Berger's planing mill in Philadelphia, Pa., was destroyed by fire February 12, entailing a loss of about \$40,000.

The Standard Guano & Chemical Company's factory, at New Orleans, La., was destroyed by fire February 11. The loss is estimated at \$77,200.

The gas engine manufacturing plant of Cary Crozier, Muncie, Ind., was recently destroyed by fire. The loss is about \$6000.

The factory of the Hamden Corundum Wheel Company, Springfield, Mass., was almost entirely destroyed by fire February 16. The loss, about \$50,000, is mostly covered by insurance, and the plant will probably be rebuilt.

#### **Hardware.**

The Frost Wire Fence Company, Cleveland, Ohio, manufacturers of the Frost fence, coiled spring wire and steel gates, have made important changes in their machinery for the production of their coiled spring wire. Every department in the new works is thoroughly organized, enabling them to give their customers the assurance that their orders will be promptly executed. The active members of this company have had 13 years' experience in the manufacture of wire fencing, fence wire and steel gates.

The Toledo Tube Company of Toledo are planning for the erection of a larger plant in that city and are considering several sites. A year ago they abandoned the production of steel tubing to take up the manufacture of shovels, and the business has increased so rapidly of late that larger facilities are necessary.

#### **Miscellaneous.**

A meeting of the stockholders of the Keystone Coal & Coke Company, Greensburg Coal Company, Hempfield Coal Company, Madison Gas Coal Company, Arona Gas Coal Company and Claridge Gas Coal Company was held in Greensburg, Pa., last week. A vote was taken on consolidating all of these companies with the Sewickley Gas Coal Company and the Carbon Coal Company into one company with a capital of \$2,500,000 under the name of the Keystone Coal & Coke Company, which resulted in favor of the consolidation. This company will own 7000 acres of coal, 3000 acres of surface land and ten well equipped mines in Westmoreland County. They will employ between 3000 and 4000 men and control, in addition to the above, some 6000 acres of coal land and improvements on the Western New York & Pennsylvania Railroad, near New Bethlehem, Pa. The principal office of the company will be in Greensburg, with branch offices at Philadelphia and Pittsburgh.

The stockholders of the Mansfield Coal & Coke Company met in Pittsburgh last week and elected the following directors: James T. Armstrong, John H. Scott, William A. Shinn, William Stewart, William E. Lincoln, George A. Berry and H. K. Porter. The board organized by electing James T. Armstrong president and William A. Shinn secretary.

The Norfolk & Western Railway has placed an order with the Southern Car & Foundry Company for 1000 box cars and 750 coal cars.

The Standard Steel Car Company of Youngstown, Ohio, have let contracts for their buildings and equipment and expect to have their plant in operation early in August. The buildings will cover 6 acres and they will have a capacity of 45 steel cars and 25 wooden cars per day.

O. L. Shadford of Ottumwa, Iowa, who owns a controlling interest in the Ottumwa Grain Cleaning Works, advises us that as soon as a desirable location can be secured they will erect a plant for the manufacture of grain cleaning, grading and wheat dressing machinery, green and roasted coffee cleaners, rice cleaning and grading machines, cleaners and dressers for all kinds of small seeds and spices, ore separators, &c. The machines are at present made by contract.

The McCormick Machinery Company of Chicago are planning to erect a large distributing warehouse in Cleveland. A building site having access to both the Erie and Big Four systems has been secured and a building to cost \$75,000 will be erected.

Robert Kercheval, president and general manager of the Davenport & Western Electric Railway, Davenport, Iowa, informs us that 35 miles of the new road have been surveyed and rights of way secured. The capital is not fully provided for, but contracts for the construction of the road will be awarded early in the spring. The completed road will be 79 miles long, running from Davenport to Muscatine and Cedar Rapids.

## The Iron and Metal Trades.

There are cross currents in the Foundry Iron trade which are particularly significant because it is that branch of the industry in which natural forces have their play almost untrammelled, whether it be on the producers' or on the consumers' side. There is a strong interest, comprising nearly all the leading Southern producers, which is determined for general and for special reasons to hold the market steady at its present admittedly remunerative level. A few Southern makers and the Northern producers act on the belief that a further advance is justified by the position. The former present very strong data in favor of the conviction that there is no danger of any famine in Foundry Iron, which seem convincing so far as the second half of the year is concerned. They state that while they have sold for delivery this year 700,000 tons of Foundry Iron, they still have 700,000 tons to market.

As we understand it, consumers are alarmed more particularly as to the deliveries during the next two or three months.

There have been very large sales of Foundry Iron in all the principal distributing markets at prices within a pretty wide range. It appears that a considerable part of this tonnage has been booked by those who have not advanced prices, while a good deal has been closed at higher figures. On the whole, it is clear that prompt delivery is difficult to arrange for, with premiums freely paid, while for the second half opinion both among sellers and among buyers is divided. We cannot help believing that a scare as to supplies for that part of the year is not justified.

That we are getting to the importing point is proven by the fact that Middlesbrough Foundry No. 3 has been bought to the extent of about 5000 tons for prompt shipment, the price being close to \$16.50, ex-ship. We understand, however, that this is possible only when specially low freights can be secured.

The natural effect of such a purchase, too, has been to stiffen the market abroad. Europe must begin to realize now that the reports of activity here have not been Yankee bluster, but that for some time to come the American "deluge of iron" is impossible.

Pittsburgh reports that the United States Steel Corporation have purchased 100,000 tons of Standard Bessemer Pig Iron, for delivery during the third quarter, at \$16, at furnace, an advance of 25c. per ton over the last purchases. Fair sized lots have been taken by others at \$16.25, and as high as \$16.50 has been paid for a 5000-ton lot. There is some talk of importing Bessemer Pig.

The Steel situation has not changed, as to scarcity of Billets. The smaller rolling mills who depend upon the open market are in serious trouble. They are eagerly seeking foreign Steel, but find that lately prices have jumped. We understand that for 2-inch Billets the price is now 85 shillings, Antwerp, an advance of close to \$1 per ton during the week. Some business has been done in a moderate way. It is estimated that thus far during the present movement fully 100,000 tons of foreign Steel has been purchased. Some small lots of foreign Wire Rods have also been placed.

In Finished Material the tonnage keeps up surprisingly well in many lines. Premiums are being paid for prompt and early delivery of Beams and Shapes. In Chicago some heavy sales of Bars have been taking place, individual transactions running as high as 10,000 tons. In the Merchant Pipe trade quiet reigns. It remains to be seen what developments will be when the active season opens. The producing capacity has been very rapidly enlarged during the last year, and it is stated that the independent mills can now make quite as much as the works in the consolidation.

In the Old Material markets it is noteworthy that six of the leading consumers of Steel Scrap in the East have combined in order to keep Steel Rails at a maximum of \$18.75.

## A Comparison of Prices.

At date, one week, one month and one year previous.

### Advances Over the Previous Month in Heavy Type Declines in Italics.

	Feb. 19, 1902.	Feb. 12, 1902.	Jan. 22, 1902.	Feb. 20, 1901.
<b>PIG IRON:</b>				
Foundry Pig No. 2, Standard				
Philadelphia .....	\$17.25	\$17.25	\$16.75	\$15.25
Foundry Pig No. 2, Southern				
Cincinnati .....	14.75	14.75	14.75	12.75
Foundry Pig No. 2, Local Chicago	17.00	16.00	16.50	14.00
Bessemer Pig, Pittsburgh .....	17.00	16.75	16.75	14.75
Gray Forge, Pittsburgh .....	16.50	16.25	16.25	13.75
Lake Superior Charcoal, Chicago	20.50	20.00	19.50	17.50

### BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh .....	30.00	29.00	27.50	20.50
Steel Billets, Philadelphia .....	32.00	32.00	29.50	22.00
Steel Billets, Chicago .....				22.50
Wire Rods, Pittsburgh .....	35.00	35.00	34.00	35.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	26.00
Spikes, Tidewater .....	2.00	2.00	2.00	1.50
Splice Bars, Tidewater .....	1.60	1.60	1.65	1.30

### OLD MATERIAL:

O. Steel Rails, Chicago .....	15.00	15.00	14.75	12.00
O. Steel Rails, Philadelphia .....	18.75	19.00	18.50	15.50
O. Iron Rails, Chicago .....	22.50	22.00	21.00	18.00
O. Iron Rails, Philadelphia .....	21.50	21.00	21.00	18.50
O. Car Wheels, Chicago .....	18.00	16.50	16.50	16.50
O. Car Wheels, Philadelphia .....	17.00	17.00	17.00	17.00
Heavy Steel Scrap, Chicago .....	14.00	14.00	13.75	11.50

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.67	1.67	1.67	1.45
Common Iron Bars, Chicago .....	1.75	1.75	1.65	1.45
Common Iron Bars, Youngstown	1.60	1.60	1.50	....
Steel Bars, Tidewater .....	1.62	1.62	1.67	1.45
Steel Bars, Pittsburgh .....	1.50	1.50	1.50	....
Tank Plates, Tidewater .....	1.78	1.78	1.78	1.55
Tank Plates, Pittsburgh .....	1.60	1.60	1.60	1.40
Beams, Tidewater .....	1.75	1.75	1.75	1.63
Beams, Pittsburgh .....	1.60	1.60	1.60	1.50
Angles, Tidewater .....	1.75	1.75	1.75	1.53
Angles, Pittsburgh .....	1.60	1.60	1.60	1.40
Skelp, Grooved Iron, Pittsburgh	1.75	1.75	1.70	1.50
Skelp, Sheared Iron, Pittsburgh	1.80	1.80	1.75	1.55
Sheets, No. 27, Pittsburgh .....	3.00	3.00	2.90	2.85
Barb Wire, f.o.b. Pittsburgh .....	2.90	2.90	2.90	2.90
Wire Nails, f.o.b. Pittsburgh .....	2.05	2.05	2.00	2.30
Cut Nails, Mill .....	1.95	1.95	2.05	2.05

### METALS:

Copper, New York .....	12.25	12.75	11.00	17.00
Spelter, St. Louis .....	3.95	3.87½	4.10	3.87½
Lead, New York .....	4.10	4.10	4.00	4.37½
Lead, St. Louis .....	4.00	4.05	3.90	4.17½
Tin, New York .....	24.87½	24.55	23.62½	26.90
Antimony, Hallet, New York .....	8.00	8.00	8.00	9.25
Nickel, New York .....	50.00	50.00	50.00	55.00
Tin Plate, Domestic, Bessemer,				
100 lbs., New York .....	4.19	4.19	4.19	4.19

## Chicago.

FISHER BUILDING, February 19, 1902.—(By Telegraph.)

Notwithstanding the efforts of the largest manufacturers to keep prices from advancing, the market presents strong indications of breaking away. Consumers are in such need of all kinds of Iron and Steel that they are offering premiums for better deliveries and higher prices are constantly being realized than current quotations. The demand in some lines is beyond the capacity of existing works, and some curious features are brought about by this condition. For instance, Relaying Rails are now held at a price above that of new Rails. The shortage of cars is causing much trouble to manufacturers, who are hampered in receiving raw materials as well as shipping finished products.

**Pig Iron.**—The orders placed during the past week aggregated a very large tonnage. Perhaps no single order exceeded 5000 tons, but numerous transactions are reported running from 1000 to 5000 tons. These orders have come from all classes of consumers, and cover deliveries running through the last half of the year. Many buyers now placing orders desire shipments to begin in May, if possible. A constant pressure is brought on the furnace companies to ship Iron faster than the terms of the contract. Premiums are being paid of 50c. to \$1 per ton for any kind of Iron available for early delivery.



Orders are being sent to furnaces to ship all surplus Iron to Chicago whenever any is available and of any character. An advance of \$1 has been made on local Iron, but this does not check the demand. Inquiries continue to be received in great number, Monday having been the largest day in this respect in the history of some of the local sales agents. It is understood that the Malleable foundrymen have not covered their requirements for the last half of the year to any extent. Some of them are now coming into the market, and it is expected that buying from this source will be heavy. One of the Union furnaces of the Illinois Steel Company will be blown in this week, but this is offset by the banking of one of the furnaces in Wisconsin. The Coke supply is running so short that no stock can be accumulated, and a severe storm would probably cause several stacks to be banked in this vicinity. We quote as follows:

Lake Superior Charcoal.....	\$20.50 to \$21.50
Local Coke Foundry, No. 1.....	17.50 to 18.00
Local Coke Foundry, No. 2.....	17.00 to 17.50
Local Coke Foundry, No. 3.....	16.50 to 17.00
Local Scotch, No. 1.....	17.50 to 18.00
Ohio Strong Softeners, No. 1.....	19.50 to 20.00
Southern Silvery, according to Silicon.....	16.90 to 17.15
Southern Coke, No. 1.....	16.40 to 16.65
Southern Coke, No. 2.....	15.65 to 15.90
Southern Coke, No. 3.....	15.15 to 15.40
Southern Coke, No. 1 Soft.....	16.40 to 16.65
Southern Coke, No. 2 Soft.....	15.65 to 15.90
Foundry Forge.....	14.65 to 15.15
Southern Gray Forge.....	14.65 to 15.15
Southern Mottled.....	14.15 to 14.65
Southern Charcoal Softeners, according to Silicon.....	15.50 to 16.50
Tennessee Silicon Pig.....	17.15 to 17.65
Alabama and Georgia Car Wheel.....	20.65 to 21.65
Malleable Bessemer.....	18.00 to 19.00
Standard Bessemer.....	18.25 to 20.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	18.50 to 19.00

**Bars.**—The consumption is so heavy that the efforts of manufacturers to persuade buyers to postpone the placing of more orders are unavailing. It is asserted that the only way in which the demand can be checked will be by an advance in price. The business placed during the week has been large, and some heavy single orders have been booked, one of them calling for 10,000 tons. Mill shipments of Common Iron are quoted at 1.75c. to 1.80c.; Soft Steel Bars, 1.65c. to 1.80c., and Hoops, 2.10c. to 2.20c. Jobbers not only find all their customers taking larger quantities than usual, but are being called upon to help out the shortage of large consumers who are not securing sufficiently rapid shipments from mills. Small lots are held at 1.90c. to 2c. for Bars, and 2.40c. to 2.50c. for Hoops.

**Structural Material.**—Another large company have retired from the market, refusing to take any more orders. The demand is so great that it cannot be satisfied. Consumers are endeavoring to induce mills to accept orders for shipment at any time at the earliest opportunity, but they are declining to book them. The building trade in this locality never gave promise of greater activity. Permits were issued by the building department on Monday for buildings aggregating \$5,000,000, which establishes a record for this city. These buildings include several large Steel structures, and the contractors will probably have much difficulty in securing the material. The local yards are almost bare of stocks of desirable sizes. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2.10c. rates; Tees, 2.15c. rates.

**Plates.**—Greater activity is noted, quite a tonnage having been placed the past week, which puts the local mills in much better shape, while some of the orders placed went to Eastern works. The demand from store is considerably larger, and in some cases an advance on the prevailing store prices has been made on specially desirable stock. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c. to 1.95c.; Marine, 1.95c. to 2.05c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

**Sheets.**—The situation from the standpoint of the mills is very satisfactory, as orders are improving and the independent mills are not disposed to make conces-

sions. Heavy Sheets are particularly firm, and the most desirable orders do not tempt any departure from regular rates. Mill shipments of No. 27 Black Sheets are quoted at 3.05c. to 3.15c., Chicago, and Galvanized at 70, 10 and 5. Small lots of Black Sheets are selling at 3.35c. to 3.45c. The competition on Galvanized Sheets among jobbers is still sharp, but it is expected that this condition of affairs will shortly improve. The usual price on small lots is 70 and 5, but a lower rate has been made by some houses.

**Merchant Pipe.**—While the volume of business cannot be called large, it is all that could be expected for the season. An occasional order of good size is placed, but heavy general buying is not expected until some time in March. Carload lots are now quoted as follows, random lengths: Black, ⅜ to ½ inch, 60 off; ¾ to 10 inches, 67 off; Galvanized, ⅜ to ½ inch, 47 off; ¾ to 6 inches, 55 off.

**Boiler Tubes.**—The demand is better, and prices are firmly maintained. Quotations are as follows:

	Steel.	Iron.
2½ to 5 inches.....	57½	47½
1¾ to 2½ inches.....	50	40
1 to 1½ inches.....	35	30
6 inches and larger.....	52½	45

**Merchant Steel.**—Some contracts are being placed for the second and third quarters, and large consumers are piecing out their wants. Specifications against contracts are heavy, and the mills are in excellent condition. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.90c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.20c. to 2.35c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted 6½c. to 7c. for mill shipments; specials, 12c. upward.

**Rails and Track Supplies.**—A sale of about 10,000 tons of Standard Section Rails has been made for December delivery. The difficulty in securing Rails is causing a demand for Seconds and for Relaying Rails, which is running them up to high prices. Holders of Relaying Rails are asking more for them than the mills quote on new Rails. Heavy Sections are quoted at \$28 and Light Sections at \$32 to \$36. Fastenings are quoted as follows: Splice Bars, 1.70c. to 1.80c.; Spikes, 2.10c. to 2.15c.; Track Bolts, with Hexagon Nuts, 2.90c. to 2.95c.; Square Nuts, 2.75c. to 2.80c.

**Billets.**—The great scarcity of Billets is particularly felt by the local forging establishments. The best price made on Open Hearth Billets for delivery beginning in July is \$35. Almost no Billets can be had earlier than that date, and buyers would willingly pay \$36 to \$40, if they could secure them.

**Old Material.**—A deadlock exists in rolling mill stock. The mills would buy if prices were made to suit their views, but those who are making Scrap or are gathering it are asking so much that neither mills nor large dealers will pay the price asked. Old Steel Rails have in some cases sold at \$23 or better. Car Wheels are scarce and higher. Relaying Rails are so very scarce that holders are asking \$29 to \$30. Cast Scrap is in strong demand and a little higher in price. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$22.50 to \$23.00
Old Steel Rails, mixed lengths.....	15.00 to 15.25
Old Steel Rails, long lengths.....	22.50 to 23.50
Heavy Relaying Rails.....	29.00 to 30.00
Old Car Wheels.....	18.00 to 18.50
Heavy Melting Steel Scrap.....	14.00 to 14.50
Mixed Steel.....	11.50 to 12.00

The following quotations are per net ton:

Iron Fish Plates.....	\$17.00 to \$17.50
Iron Car Axles.....	22.50 to 23.00
Steel Car Axles.....	18.00 to 18.50
No. 1 Railroad Wrought.....	16.25 to 16.75
No. 2 Railroad Wrought.....	14.50 to 15.00
Shafting.....	16.00 to 16.50
No. 1 Dealers' Forge.....	13.50 to 14.00
No. 1 Bushing and Wrought Pipe.....	12.00 to 13.00
Iron Axle Turnings.....	12.25 to 12.50
Soft Steel Axle Turnings.....	11.00 to 11.50
Machine Shop Turnings.....	11.25 to 11.75
Cast Borings.....	6.25 to 6.75
Mixed Borings, &c.....	5.75 to 6.00
No. 1 Bolders, cut.....	11.00 to 11.50
No. 2 Bolders, cut.....	10.00 to 10.50
Heavy Cast Scrap.....	12.50 to 13.50
Stove Plate and Light Cast Scrap.....	9.50 to 10.00
Railroad Malleable.....	13.50 to 14.00
Agricultural Malleable.....	12.00 to 12.50

**Metals.**—Copper is still quiet. Lake is quoted in carload lots at 13c., and Casting brands at 12¾c. Pig Lead is in much better demand, consumers buying quite freely. It is unchanged at 4.05c. for Desilverized and 4.15c. for Corroding in 50-ton lots. Selling prices of small lots of Old Metals are as follows: Heavy Cut Copper, 12c. to 12½c.; Copper Bottoms, 11c.; Pipe Lead, 3.75c.; Zinc, 3c.

**Coke.**—The situation has not improved. Furnaces are depending on daily receipts, and are therefore in precarious condition. Foundrymen are still obliged to pay \$5.50 for any kind of spot Coke. Strictly Standard 72-hour Connellsville Coke is quoted at \$5.25 for future delivery.

## Philadelphia.

FORREST BUILDING, February 17, 1902.

The dominant feature during the past week has been the increasing scarcity of Pig Iron. Every hole and corner has been exploited to find material, and odds and ends long neglected have been picked up almost regardless of price or quality. Off Basic, off Bessemer or mistits of any kind have all been gathered in, and still, like Oliver Twist, they want more. Prices have been just about what holders choose to name, although it must be conceded that as a rule holders try to be as reasonable as possible, considering the exceptional opportunities for a squeeze. It is difficult to say how much advance the market has made since the date of our last report, because there is no uniformity in sales, and those who have Iron for moderately early delivery have no occasion for considering what other makers quote, it is simply a question of expediency what they ask. One buyer may have claims for consideration which are greater than another may have, so that the price becomes simply a question of policy. Prospects of easier conditions appear to be receding, and if the supply can be made large enough to go around, consumers are not likely to make objections to prices, so long as they remain at about to-day's figures. The furnace report (published in the last issue of *The Iron Age*), although not entirely unexpected, was a startling exhibit, and when seen in cold figures it began to come home to everybody. What is wanted is immediate relief, not something three, six or nine months later on, but right now; but how it is to be brought about with roads completely snowed up in addition to all the other difficulties, is a problem yet to be solved. In the more advanced products the situation is not quite as bad as it is in Pig Iron. A considerable tonnage of Billets was placed in foreign markets some time ago, but prices have been advanced to a parity with American Steel, besides which it is about as hard to get one as it is to get the other. Structural Material is as scarce as ever, and Eastern mills are getting \$4 to \$6 per ton more than the official prices, and even then are far behind in their deliveries. From a general survey of the market, it might be supposed that manufacturers are luxuriating in prosperity, but, as a matter of fact, it is an exceedingly anxious time, because of the difficulty in living up to engagements, while as already stated prospects of easier conditions appear to be more remote than ever.

**Pig Iron.**—Under present circumstances it is as impossible as it is useless to attempt to quote prices on Pig Iron. It is "a go as you can" market, and sellers give no heed to what others may quote. They make their own prices, but in doing so take into account the nature of the claim the applicant has for favorable consideration, also when the Iron is wanted and how much can be spared. For prompt shipments \$17.75 to \$18 would be quoted for No. 2 X Foundry, and \$17 to \$17.50 for good Mill Irons, although for the third and fourth quarters of the year 75c. to \$1 less is quoted, but at the reduced figures there is not much disposition to accept large orders, and it is thought that the lower quotations are made for the purpose of checking speculation rather than to a desire to secure tonnage. The outlook for more liberal supplies is by no means encouraging. The shortage of cars and Coke shows no abatement, and with the roads more or less snow bound it is feared that the worst scarcity has yet to be experienced.

There is some probability of Middlesboro Iron being brought in, and West Coast Bessemer is offered at \$19, but up to this date no actual sales have been closed so far as known. The necessity for securing material is so great, however, that it is almost certain that business will be done in the near future. The extreme range of prices would be about as follows for Philadelphia and nearby deliveries, depending mostly on the dates for delivery: No. 1 X Foundry, \$18.25 to \$18.50; No. 2 X Foundry, \$17.25 to \$18; No. 2 Plain, \$16.75 to \$17; Standard Gray Forge, \$17 to \$17.50; Ordinary Gray Forge, \$16 to \$16.75; Basic (Chilled), \$17.50 to \$18, with sales this week at the last named figures; Bessemer, \$20 to \$20.50.

**Billets.**—The scarcity of Steel makes it almost impossible to quote prices, as there is very little to be had at any price. Quotations are nominally about \$32 for American, and pretty nearly the same figures for German, but it is difficult to arrange for prompt shipments, and, moreover, foreigners are not disposed to give much advantage to transient customers when it can be avoided.

**Plates.**—The demand is not unusually large, but there is plenty of work on the books, so that full employment is maintained at the leading mills. The difficulty in securing Structural Shapes retards the consumption of Plates, but apart from that the outlook is very good, and sales quite equal to the week's deliveries. Prices for Philadelphia and nearby points are as follows: Universals, 1.75c. to 1.80c.; Sheared, 1.75c. to 1.80c.; Flange, 1.85c. to 1.95c.; Fire Box, 1.95c. to 2.05c.; Marine, 1.95c. to 2.05c.

**Structural Material.**—The difficulty in meeting the demand appears to be as great as ever, and buyers in the West have been placing orders in this section at Eastern prices, which are several dollars per ton more than the official quotations, which are for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

**Bars.**—The demand for Steel Bars is very active, and prompt shipments difficult to secure. Iron Bars are in fairly good demand, but mills have a great many orders on their books, so that there is plenty of work for everybody. A considerable amount of business was placed before the recent advance went into effect, so that the demand was in some degree discounted. Prices are very firm, however, and it is not unlikely that another advance will be made in the near future. Prices are about as follows: Iron Bars, 1.67c. to 1.72c., delivered; Steel, 1.62c. to 1.67c.

**Sheets.**—There is a very heavy demand for Sheets, and manufacturers are beginning to look for a scarcity something like that of a year ago. Orders for the high numbers cannot be placed unless at a considerable premium, and for that reason quotations along the entire line are more or less uncertain, but for carload lots and upward of ordinary Sheets, quotations would be about as follows, and 1-10c. to 2-10c. more for best qualities—viz.: No. 10, 2.30c. to 2.40c.; No. 14, 2.60c.; Nos. 16 and 17, 3c.; Nos. 18-21, 3.10c.; Nos. 26, 27, 3.30c. to 3.40c.; No. 28, 3.50c.

**Old Material.**—The leading Steel melters in this section have fixed the prices they are willing to pay at \$18.75, but it remains to be seen what holders will do about it. Supplies of all kinds of Scrap are light and, as a rule, prices very strong. The range of bids and offers would be about as follows for deliveries in buyers' yards: Low Phosphorus Scrap, \$22 to \$24; Choice Railroad Scrap, \$21 to \$21.50; Light (Ordinary), \$13 to \$14; Light (Forge), \$15 to \$16; Machinery Cast, \$14.75 to \$15.25; Heavy Steel, \$18.75 to \$19.25; Old Steel Rails (short lengths), \$18.75 to \$19.25; Old Iron Rails, \$21.50 to \$22.50; Wrought Turnings, \$13.50 to \$14; Choice Heavy, \$14 to \$15; Cast Borings, \$8 to \$8.50; Old Car Wheels, \$17 to \$17.50; Iron Axles, \$24.50 to \$25.50.

Thos. G. Lovegrove of Philadelphia, for the past 30 years trading as Lovegrove & Co., announce the incorporation of the business under the corporate name of Lovegrove & Co., Incorporated, with an authorized capi-



tal of \$30,000. Thos. G. Lovegrove has been elected president and E. W. Morris, secretary and treasurer.

## St. Louis.

CHEMICAL BUILDING, February 19, 1902.—(By Telegraph.)

**Pig Iron.**—It is said that the actual inquiry and demand is good, but the sales are of a lighter order than recent weeks, and are so for the very good reason that Pig Iron in any quantity gets more difficult to secure from day to day. It is true some small lots are offered in the market, but a ready and eager buyer is always on hand. Many furnaces are refusing to sell at the present Birmingham basis and are expecting to realize more money for deliveries during the first half of the year. As in other sections, the Southern furnaces are again being hampered by inadequate transportation facilities. We noted last week an advance of 50c. by some for Car Wheel Iron, and we now hear it is held for a higher price. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.75 to \$16.00
Southern, No. 2 Foundry.....	15.25 to 15.50
Southern, No. 3 Foundry.....	14.75 to 15.00
Southern, No. 4 Foundry.....	14.25 to 14.50
No. 1 Soft.....	15.75 to 16.00
No. 2 Soft.....	15.25 to 15.50
Gray Forge.....	14.25 to 14.50

**Bars.**—Mills and jobbers alike voice the same pressure of demand that has existed for some time, and there appears no sign of any let up in present conditions. The price-list is without change. We quote, from mill, Iron Bars at 1.80c.; Steel Bars at 1.80c. to 2c. Jobbers quote Iron Bars at 2c. and Steel Bars at 2.10c., full extras.

**Rails and Track Supplies.**—The Rail department of the market is devoid of any new features, the same high pressure being the most important factor in the situation. Track Supplies continue in urgent demand and the mills are hard pushed to meet all requirements. Prices are without change. We quote Splice Bars, 1.75c. to 1.95c.; Bolts, Square Nuts, 2.75c. to 2.90c.; with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2½c.

**Small Angles and Channels.**—The jobbers say the demand continues strong and steady and make a quotation of 2.30c., base, for material of this class.

**Sheets.**—The demand for Sheets of all grades and sizes continues on a very liberal basis. Jobbers quote Stove Pipe size, No. 27, at 3.60c. to 3.65c., and Galvanized Sheets, 70 to 70 and 5 off in round lots.

**Pig Lead.**—It cannot be said that the Pig Lead market has improved its condition materially since our last report, in fact it is inclined to show a halting tendency. Prices show very little change, Chemical being quoted at 4c. and Desilverized at 4.05c.

**Spelter.**—Sales are on a light order in the Spelter market, and the price movement is within narrow limits. The quotation is 3.95c.

## Cincinnati.

FIFTH AND MAIN STS., February 19, 1902.—(By Telegraph.)

The general trade reports of the Pig Iron situation of a week ago had the effect upon the market of greatly increasing the volume of business. The past week on that account was a remarkably active one. Orders for all grades of Iron and from all classes of consumers have simply poured in from all sections reporting to the agency headquarters here. A good many orders for large lots of Iron have been booked, and at this writing the movement is unchecked. With the exception of Ohio Silveries, which are higher, prices are practically unchanged. The leading Southern interest still quotes \$12, Birmingham, for No. 2, while some furnaces are asking and obtaining up to 75c. advance over that figure. The general market, however, is based on a range of from \$12 to \$12.50, Birmingham, for No. 2. The market is very strong, and were it not for troubles in delivery would be almost an ideal one. Freight rate from Hanging Rock district is \$1.10 and from Birmingham \$2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$15.25 to \$15.75
Southern Coke, No. 2.....	14.75 to 15.25
Southern Coke, No. 3.....	14.25 to 14.75
Southern Coke, No. 4.....	13.75 to 14.25
Southern Coke, No. 1 Soft.....	15.25 to 15.75
Southern Coke, No. 2 Soft.....	14.75 to 15.25

Southern Coke, Gray Forge.....	13.75 to 14.25
Southern Coke, Mottled.....	13.75 to 14.25
Ohio Silvery, No. 1.....	17.75 to 18.25
Ohio Silvery, No. 2.....	17.25 to 17.75
Lake Superior Coke, No. 1.....	18.10 to 18.35
Lake Superior Coke, No. 2.....	17.60 to 17.85
Lake Superior Coke, No. 3.....	16.35 to 16.85
Southern Basic.....	to 16.25

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$19.25 to \$20.25
Standard Southern Car Wheel, No. 2.....	18.75 to 19.75
Lake Superior Car Wheel and Malleable.....	20.00 to 21.00

**Plates and Bars.**—The general market is very strong and active, though mill operators here report difficulty in securing the necessary raw material for their plants. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.72c., with half extras; same in small lots, 1.85c. to 1.90c., with full extras; Steel Bars, in carload lots, 1.65c. to 1.70c., with half extras; same in small lots, 1.85c. to 1.90c., with full extras; Angles, in carload lots, 2c.; Plates, ¼-inch and heavier, 1.90c. to 2c.; 3-16-inch, 2.10c.; Sheets, No. 16, 2.90c. to 3c.

**Old Material.**—The market is in a very satisfactory condition, with a tendency toward higher figures. We quote dealers' buying prices, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, per net ton, \$16 to \$16.25; Cast Railroad and Machine Scrap, \$12.25 to \$12.75; Iron Axles, \$20.50 to \$21; Iron Rails, \$19.50 to \$20; Steel Rails, rolling mill lengths, \$15.75 to \$16; short lengths, \$13.75 to \$14; Car Wheels, \$16.25 to \$17.25; all prices except No. 1 Wrought on the basis of gross tons.

## Birmingham.

BIRMINGHAM, ALA., February 17, 1902.

To every inquiry as to the condition of the Iron market the past week came the response that it could not be better. The demand continues to be fine, and includes all the grades. On most of them the anticipated output up to the last quarter has been sold and buyers are taking considerable of the last quarter's production. Basic Iron has been well sold up for the entire year, and there is none offering for delivery for any part of the year. It sold for \$13.50, with some sales currently reported at \$13.60. The market is yet on the basis of \$12 for No. 2 Foundry, but the necessities of some buyers are proffering premiums for desirable deliveries. Some sales have been made as high as \$12.50. No. 3 Foundry is quoted at \$11 to \$11.25, while Gray Forge is \$10.50. Activity pervades every branch of the trade, and the current make is readily absorbed and buyers are as eager as ever for prompt shipments. The movement of Iron for January in this district breaks all previous records. The shipments of Pig Iron from Alabama and Tennessee for January amounted to 173,916 tons. Of this amount 90,834 tons went from the Birmingham district, as also did 4816 tons of Cast Iron Pipe. These shipments would have been increased had transportation been available. The shipments of Steel Billets from the Steel mill of the Tennessee Coal, Iron & Railroad Company were 7348 tons, the largest amount shipped in any one month. The total tonnage shipped in January from Alabama and Tennessee amounted to 182,208 tons, which is 10,000 tons greater than ever before recorded. The export shipments were 398 tons, which shows the poor state of that trade. Shipments are just as free as facilities are offered, but there seems to be another congestion in the car situation and shippers are again running behind in their deliveries. The increase in business has been greater than facilities for moving it, and the very large orders for additional cars lately placed by several roads shows that they realize the inadequacy of present facilities.

There have been some changes in the management of important interests since our last letter. J. M. Dwyer, who has for 22 years been the superintendent of the Birmingham rolling mills, has resigned his position and has been succeeded by Mr. Pritchard. John Dowling, who has long been manager of the Bessemer furnaces, has acquired an interest in the Trussville Furnace and has taken charge, being succeeded by A. P. McClure as acting superintendent.

Furnace No. 4 at Bessemer, after undergoing thorough repairs, is again blown in and its capacity increased from 160 tons to 250 tons.

It is current report that an important sale of Coal lands was made the past week, the consideration being \$100,000. There are other deals under consideration that apparently will come to a successful conclusion. Work on our skyscrapers is being pushed, and the street railway is still making betterments and reaching out and extending its territory. It has of late materially increased its power house and found no difficulty in placing the order for necessary machinery here. So great has been our progress in this line that it is a rare thing to send off any order for machinery of any kind. Our shops are full of work and business is broadening and orders are no longer restricted to a narrow field. The prospect is that this will be a banner year in the history of Birmingham.

### Cleveland.

CLEVELAND, OHIO, February 18, 1902.

**Iron Ore.**—During the week just closed there has been considerable activity among some of the Ore shippers in covering what material they hope to ship this year with season contracts with the vessel firms. It is now estimated that at least 2,000,000 tons of Ore has been covered on the basis of 80c. from Duluth to Ohio ports. This means the establishment of a rate of 70c. from Marquette and 60c. from Escanaba, at both of which figures some business has been done. When it is computed that it will be necessary to move 11,000,000 tons this season in chartered boats the business already done shows up as a very small per cent. of what may be expected to be done hereafter. This brings out the fact that most of the big shippers have done nothing so far. The United States Steel Corporation have not chartered a boat, and in fact are combating the rate which the vessel owners are demanding by holding out for a 75c. rate instead of the 80c. rate already established for some movements. The contention on this point is rather severe among the vessel owners, and there is grave talk of a pool of the vessel property being established to offset the designs, as they put it, upon the part of the shippers. The pool, however, will depend entirely upon the further action of the shippers, for if they agree to pay the 80c. rate the vessel interests will not think it necessary to fortify themselves with an organization. It is now becoming quite evident that the stocks on the lake docks this spring will be heavier than in many years. The movement to the furnace stock piles during the winter has been far from expectations, and the promise is now not good that there will be any improvement during the spring. A good many shippers will make liberal allowance for wild movements of Ore during the summer on this account, as the amount of Ore they will have to bring down the lakes will depend entirely upon the state of the docks at the opening of navigation. It is possible that the probable movement of Ore will be scaled greatly during the coming month. For the same reason the sales of Ore are being made more slowly than heretofore. The quantities of which disposition has been made have not been up to the standard by any means. This has not caused a shading of the prices to any extent and the market is still quoted at \$4.25 for old range Bessemer; \$3.25 for old range non-Bessemer and Bessemer Mesaba, and \$2.75 for non-Bessemer Mesaba.

**Pig Iron.**—About all of the furnaces in the Valleys are banked again because of the lack of Coke. The necessity for discontinuing activity came Saturday afternoon, when the railroads fell short on their Coke deliveries. Last week ten stacks in the Valley were idle continuously, and the latter part of it the suspending of operations was complete. The same causes are assigned now as have been brought forward for weeks—namely, that the railroads not only lack cars for the movement, but actually have not the motive power when they have the cars, nor the track space to move the trains, both cars and motive power being at hand. The situation is a grave one and more particularly so at this time, since whatever surplus there may have been was wiped out during the last close down, and now the suspension of operations means that those who have been depending upon this material must likewise suspend operations

until the Coke supply shall have been renewed. This situation appears in the face of an enormous demand for the material. Aside from the fact that production is curtailed it is now apparent that the orders coming in would have about consumed the normal production of the furnaces for the greater part of the year and contracts have been covered which entail the delivery of large quantities of Iron during the remainder of the year. On these deliveries the old price has prevailed of \$16 to \$16.50 for No. 2 and No. 1, respectively. The curtailment of the production of Basic has caused the Cleveland producers to withdraw from the market for the present. They will make no more quotations until such a time as they are more nearly caught up with their orders. The last price, however, at which any material was sold was \$16, in the Valley.

**Finished Material.**—From present market indications it is quite evident that some of the building projects which are now on foot will have to wait a more convenient time for the Steel mills. Many of them are under contemplation for which it will be impossible to find Steel of which to build them. The situation now seems to have warranted some of the mills in refusing to take further orders for the present. Some of the agencies have been instructed to take no more orders for delivery during the remainder of this year. It is hardly possible that the entire supply has been sold, but the indication is rather one of caution on the part of the mills, which prefer to catch up on present orders before taking others. The price still holds at 1.70c. Sheets are likewise in demand, and some of the mills are not in position to take further orders for some time to come. All sales here are out of store. Galvanized Sheets are the only weak point on the market, but there is plenty of promise of big business ahead to warrant the dealers in stocking up heavily. Some who have already been well stocked are inclined to unload a little below the market, but for the most part the prices hold well up. Some gauges of Sheets are hard to obtain, but, on the whole, store sales are only hampered by the possibility of deliveries. The prices hold firm, being based on a quotation of from 3.40c. to 3.60c. There is but a slight demand now for Pipe, but the indications here are likewise for a big business as soon as the weather moderates, and the dealers are preparing to take care of the coming needs. The demand for Steel Billets is heavy, but the supply is very short. It is almost impossible to obtain material at any price, and some of the concerns in Cleveland are shut down for the lack of it. One plant of good size has been closed for two weeks, having no Billets, and is not now able to say when its needs will be supplied. The change of basis in the price of Bars has brought about an increased demand for Bessemer Steel Bars instead of for Iron Bars, but this situation is not worrying the producers any, as all have plenty of business as it is. The market has stiffened up in the last few weeks, and it is now necessary for some to supply their needs out of store. The store prices here are 1.75c. to 1.90c. for Iron and Steel Bars, with mill sales being made at the old prices of 1.50c. for Bessemer Steel Bars, Pittsburgh, and 1.60c., Pittsburgh, for Open Hearth Steel Bars and Iron Bars. There is a good demand for Plates, and the market is strong. The price holds firm at 1.75c., with deliveries being offered for Sheared Plates only after two months and for a long period on Universal Plates.

**Old Material.**—The Scrap trade has been very brisk during the week with the Cast Scrap trade showing up particularly strong. All grades have been in very good demand, and the prices as formerly quoted still prevail. The market is represented by the following quotations: No. 1 Wrought, \$16 net; Cast Borings, \$8 gross; Wrought Turnings, \$12.25 gross; Cast Scrap, \$13 net; Heavy Steel, \$17 gross; Old Iron Rails, \$22 gross; Old Iron Axles, \$22 gross; Steel Rails, \$17 gross; Old Car Wheels, \$17 gross.

The Champion Iron Company of Kenton, Ohio, have been awarded a verdict for \$16,970.64 against the Burgess Steel & Iron Works, Portsmouth, Ohio. The suit was for \$17,000 for nondelivery of goods, which forced the plaintiff to buy in the open market at almost double the contract price.



## Pittsburgh.

HAMILTON BUILDING, February 19, 1902.—(By Telegraph.)

The United States Steel Corporation have bought 100,000 tons of Standard Bessemer Iron for July, August and September delivery at \$16, Valley furnace. Most of this Iron was bought from the Valley furnaces, but a part of it was purchased from outside furnace interests that are working closely with the Bessemer Furnace Association. In addition there have been sales of 15,000 to 20,000 tons of Bessemer Iron for second and third quarters at \$16.25 to \$16.50 at furnaces. These sales have naturally further strengthened the Pig Iron market, and there is every indication that prices of metal will be higher. We can state that negotiations are on for the importation of foreign Iron, and one lot of 5000 tons of Foundry has already been closed. Shipments of Coke Monday and Tuesday of this week were good, and the furnacemen hope that the worst of the Coke trouble is over. Forge Iron is very firm, and has sold in fairly large lots at \$16.50, Pittsburgh. Foundry Iron is active and higher in price, and No. 2 has sold in small lots for prompt shipment at \$17, furnace. We quote Standard Bessemer Iron at \$16 in large lots, which is the official price of the Bessemer Furnace Association, but note that sales of good sized lots have been made at \$16.25 to \$16.50 at furnace. It is claimed that Bessemer Iron has sold for delivery through second half at \$16.75 at furnace. We quote Forge Iron at \$16.50; No. 1 Foundry, \$17.25 to \$17.50, and No. 2, \$17, f.o.b. cars, Pittsburgh. We note a sale of 100,000 tons of Bessemer at \$16 at furnace, 5000 tons for third quarter at \$16.50 at furnace and other sales of 10,000 to 15,000 tons at \$16.25 to \$16.50 at furnace; also 2000 tons of Gray Forge at \$16.50, Pittsburgh.

**Billets.**—There is a good deal of inquiry for Steel, but very little to be had at any price. Prompt Billets would readily bring \$30, delivered, in Pittsburgh district. Sheet Bars, cut to length, have sold on the basis of \$32.50 to \$33, delivered at buyer's mill.

**Spelter.**—We note a sale of 50 tons of Spelter at 4.05c., delivered, Pittsburgh. The market is a little stronger to-day, and is about 4.10c.

**Muck Bar.**—The market is a good deal firmer, and Standard grades of Muck Bar are held at \$30 to \$31, delivered at buyer's mill.

(By Mail.)

The event of the week has been the purchase of 100,000 tons of Standard Bessemer Iron by the United States Steel Corporation, for third quarter delivery, at \$16 at furnace, being an advance of 25c. a ton over the price paid by the corporation for Iron purchased about two weeks ago. In addition, there have been sales of Bessemer Iron for third quarter at \$16.50 at furnace, while sales are also reported for entire second half at \$16.75 at the furnace. Steel continues scarce and can hardly be had at any price. The whole Iron market is very strong and the sales of Iron referred to above assure present conditions all through this year.

**Muck Bar.**—The market on Muck Bar, which has been somewhat dull and prices low for some time, has improved in both respects, demand being better, and prices have shown a sharp advance. We quote Standard grades of Muck Bar at \$29.75 to \$30, Pittsburgh, and a sale of 500 tons is reported at the equivalent of \$29.75, delivered at buyer's mill.

**Rods.**—Rods for early shipment are scarce and the market is very firm. We quote ordinary Bessemer Rods at \$35 to \$35.50, maker's mill.

**Ferromanganese.**—There is no change in prices, and we quote 80 per cent. domestic Ferro at \$52.50 and foreign at about \$50, in large lots, delivered at buyer's mill.

**Spelter.**—We quote prime Western grades of Spelter at 4.10c. to 4.15c., f.o.b. Pittsburgh.

**Rails.**—The report is confirmed that the Louisville & Nashville Railroad has placed an order for about 25,000 tons of Rails with foreign mills. No large lots have recently been placed, but the Rail mills could not take on any new business for delivery prior to September, or later. We quote Standard Sections at \$28 at mill. Very

high prices continue to be paid for Light Section Rails, which are scarce. We note a sale of 16-lb. Rails at about \$45 a ton.

**Sheets.**—The meeting of the independent Sheet mills is scheduled to be held in this city to-day (Tuesday). At this meeting the report of the committee appointed to take up the matter of importing a round tonnage of Sheet Bars will be held. By some the scheme of importing such a large tonnage of Sheet Bars as proposed is not regarded as feasible. Prices of Steel have advanced on the other side, and foreign Sheet Bars would cost, laid down in this district, about as much as domestic. We note an active demand for both Black and Galvanized Sheets, and the Sheet mill capacity of the entire country is fully employed on orders sufficient to keep the mills running for the next couple of months. Here and there some unevenness in prices is reported among jobbers who have stocks bought when prices were lower, and who in some cases are naming lower figures than the mills. We quote No. 27 Black Sheets at 3c. to 3.10c. and No. 28, 3.10c. to 3.20c. For small lots from store about 3.20c. is charged for No. 27 and 3.25c. for No. 28. Galvanized Sheets are in active demand, and we quote at 70, 10 and 5 off in carloads and 70 and 10 to 70 and 5 in small lots from store.

**Plates.**—A fair tonnage is being placed, but none of the mills are filled up very far ahead and are able to ship out very promptly. It is understood that some large tonnage in Plates is pending and is expected to be placed before long, in which event the Plate situation would be considerably improved. No change in prices and we quote: Tank Plate,  $\frac{1}{4}$  inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days. Small lots of Plates from store are sold on the basis of 1.70c. to 1.75c. for Tank, with the usual advances for the higher grades.

**Structural Material.**—The domestic mills that roll Shapes are so congested with tonnage that there has been some talk of importing Beams and Channels, although nothing definite has yet been done. The American Bridge Company have taken a contract for a large power house in New York City, and some of the Material will be rolled by local mills. There is a steady stream of small orders being placed right along and prompt deliveries of Beams and Channels command premiums over regular prices. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. Small lots of Beams and other Material are sold on the basis of 1.85c. to 2c., and higher.

**Bars.**—Demand for both Iron and Steel Bars is heavy and some of the leading interests, notably American Bridge Company, are utterly unable to get deliveries of Bars as fast as needed. Indications are that the Bar mills will have all the work that they can do right through the year. The market is very firm and for prompt shipment of Bars premiums of \$2 to \$3 a ton over regular prices are readily paid. We quote 1.50c., at mill, half extras, for Bessemer Steel, and the usual advance for Basic Bars. The following additional extras are charged: For one size, aggregating 1000 to 1999 lbs., inclusive, 5c. per 100 lbs.; for one size, aggregating over 500 to 999 lbs., inclusive, 15c. per 100 lbs.; for one size, aggregating 500 lbs. or less, 25c. per 100 lbs.

**Iron and Steel Skelp.**—The market on Skelp, which has been dull in demand for some time, is much better and prices are also stronger. Some business is pending which will probably be placed in a short time. We quote Grooved Iron Skelp at 1.75c. to 1.80c., and Sheared

at 1.80c. to 1.85c. f.o.b. cars, buyer's mill, terms four months, less 2 per cent. off for cash in 30 days from date of invoice.

**Merchant Steel.**—The new price agreement on Cold Rolled and Cold Drawn Shafting is, we are advised, being firmly held. All the leading makers of Shafting are parties to the agreement. We quote Cold Rolled and Cold Drawn Shafting at 55 per cent. off in carloads and 50 per cent. off in less than carloads, delivered to all points east of the Mississippi River and north of the Ohio River. There is an urgent demand for all kinds of Merchant Steel and prices are very strong. Some of the mills are so filled up with tonnage that they are not promising deliveries inside of 60 to 90 days. We quote: Tire Steel, 1.70c. to 1.75c.; Toe Calk, best quality, 1.85c. to 2.05c.; Open Hearth Spring, best quality, 2.50c. to 2.60c.; Hammered Lay Steel, 3.75c. to 4c.; Ordinary Sleigh Shoe, 2c. to 2.25c.; Sleigh Shoes, tapered and bent, 2.75c.; Tool Steel, 6½c. and upward. On Tool Steel freight is allowed to points east of the Mississippi River.

**Boiler Tubes.**—The leading mills report a heavy demand for Boiler Tubes and prices are very strong. To the small trade the following discount is quoted:

Boiler Tubes.		Up to 22 feet.
Steel.		Per cent.
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive....	65½	
2 inch to 2½ inch, inclusive.....	60	
6 inch and larger.....	59	
Iron.		
1 inch to 1½ inch and 2½ inch.....	43½	
1½ to 2¼ inch.....	43	
2½ to 13 inch.....	53	

**Merchant Pipe.**—There is a fair volume of trade, considering the season of the year, but there is still more or less unevenness in prices. To the small trade discounts are as follows:

Merchant Pipe.		Black.	Galvd.
		Per cent.	Per cent.
¾ to 1½ inch and 11 to 12 inch.....	61	48	
¾ to 10 inch.....	68½	56	
Casing, Random Lengths.			
	S. & S.	I. J.	
2 to 3 inch.....	58	53½	
3¼ to 4 inch.....	63	59	
4¼ to 12½ inch.....	65	61½	
Casing, Cut Lengths.			
	S. & S.	I. J.	
2 to 3 inch.....	53½	59	
3¼ to 4 inch.....	59	55	
4¼ to 12½ inch.....	61½	57½	

Prices named by the mills to the jobbers are considerably lower than the above.

**Coke.**—Output of Coke in the Connellsville region last week was about 210,000 tons and shipments about 16,000 cars. There is still a scarcity of Coke for prompt shipment, which commands high prices. We quote strictly Connellsville Furnace Coke at \$2.25 a ton on contracts and \$2.50 to \$3 a ton for prompt shipment. Seventy-two-hour Foundry Coke is \$2.75 to \$3 a ton on contracts and up to \$3.50 a ton for prompt delivery.

## New York.

NEW YORK, February 19, 1902.

**Pig Iron.**—There has been a good deal of activity in this market. The Iron available at old prices is lessening in quantity from day to day, and an increasing tonnage is being placed at the higher figures, which quite a number of sellers insist upon. There is a good deal of trouble about deliveries and some anxiety concerning the next month or two. Some Nova Scotia Pig Iron has been sold, and we note the sale of 5000 tons of Middlesbrough No. 3 Foundry at about \$16.50, ex-ship. We quote for Northern Irons: No. 1, \$18 to \$18.50; No. 2 X, \$17 to \$17.75; No. 2 Plain, \$16.75 to \$17; Gray Forge, \$16.50 to \$17; Tennessee and Alabama brands, No. 1 Foundry, \$16.50 to \$17; No. 2 Foundry, \$16 to \$16.75; No. 1 Soft, \$16.50 to \$17; No. 2 Soft, \$16 to \$16.50; No. 3 Foundry, \$15.50 to \$15.75; No. 4 Foundry, \$15 to \$15.50; Gray Forge, \$15 to \$15.25.

**Cast Iron Pipe.**—Bids on about 2500 tons of Cast Iron Pipe were opened at Boston this week, but the result is not yet known. Some of the founders are having some trouble as to deliveries of Pig Iron and anticipate even more embarrassment later on.

**Steel Rails.**—For domestic business the market is very quiet, the mills being supplied with orders far

ahead. The report that an American mill had taken an order for 50,000 tons of Steel Rails for the Mexican Central Railroad is not correct. Until now only 10,000 tons have been placed, and that with an English mill. No decision has been reached as to the balance of the order, which is about 30,000 tons. We continue to quote nominally \$28 at Eastern mill for Standard Sections.

**Structural Material.**—The market continues very firm and a good business is developing. The question of deliveries is still the absorbing one, and it is possible that importations may be necessary to relieve the situation. We cannot learn, however, that any orders of consequence have yet been placed abroad. Locally a contract has been closed for a structure with Cast Iron columns on Sixty-seventh street, calling for about 1200 tons of Beams. The buildings for the new plant of the Chrome Steel Works, at Carteret, N. J., have also been let. An interesting order taken by the American Bridge Company is for 2500 tons of Structural Material for a coaling station at Manila, P. I. Among the orders recently placed are 3000 tons for a bridge for the Sharon Steel Company, across the Monongahela River; 1500 tons for buildings for the Lorain Steel Company, 750 tons for the International Steam Pump Company at Buffalo, about 2500 tons for the bridges on the new St. Louis, Memphis & Southeastern Railroad, 700 tons for bridges for the Buffalo, Rochester & Pittsburgh and 625 tons for the Boston & Maine. One of the largest highway bridge contracts recently let to the American Bridge Company is the Allen avenue viaduct of the Metropolitan, at Kansas City, calling for 800 tons of Material. Prices are quoted as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.95c.; Angles, 1.75c. to 1.85c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.78c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.40c. for C. H. No. 1, 2.90c. for Flange and 3.40c. for Fire Box. Refined Bars are 1.65c.; Soft Steel Bars, 1.70c.

Witherbee, Sherman & Co., producers of Lake Champlain Iron Ores, of Port Henry, N. Y., have removed their New York office from 56 Pine street to the Empire Building, 71 Broadway.

Pilling & Crane have removed their New York office from 56 Pine street to rooms 1304 and 1305 Empire Building, 71 Broadway.

## Metal Market.

NEW YORK, February 19, 1902.

**Pig Tin.**—Controlling influences in London have brought about another sharp advance. Yesterday the quotation reached £117. Business there in spot was, however, quite *nil*. The rise in London had very little effect on this market, as prices here have persistently remained below the parity of London quotations. Business here is very slow, most of the consumers being supplied for some months to come. These purchases were made at low figures. Spot closed to-day 24¾c. to 25¼c. Futures were quoted as follows: February, 24¾c. to 25¼c. March, 24¾c. sellers. April, 24¾c. sellers. May, 24¾c. sellers. London closed £116 10s. spot, and £109 15s. futures.

**Copper.**—Business is very quiet. It is apparent that the consumers are well supplied at low prices, as no business whatever is being transacted for consumptive account. Interest is centered solely in the sparring of the speculators, who have a good supply on hand and are bickering among themselves in an endeavor to unload. There are a good many resales in the market, but owing to the general dullness the metal is not disposed of. When the market looks soft offers are freely made, but as soon as matters stiffen up slightly these offers are withdrawn. The market has declined about ¼c. since last week. Closing quotations to-day were: Lake, spot to May, 12¼c. to 12½c.; Electrolytic, spot to May, 12¼c. to 12½c.; Casting, same delivery, 12¼c. to 12½c. The European market was not very active. In the face of a firmer market for G. M. B.'s Best Selected has declined. This is taken to show that the actual Copper is commencing to weigh heavily in the European market.



Yesterday there was only £3 10s. difference between Best Selected and G. M. B. quotations. At the close to-day quotations were: Spot, £55 10s.; futures, £54 15s.; Best Selected, £60. The exports from here continue on a large scale. Thus far this month they amount to about 8000 tons.

**Pig Lead**—Is firm at unchanged prices. Demand is good. The American Smelting & Refining Company quote 4.10c. for Desilverized, New York, 15 days, and 4.12½c. spot. It is reported that they have announced that hereafter no stock of Lead will be carried in New York. In this way nothing better than prompt shipments from the West can be obtained by consumers here. This move is looked upon as another step to force the consumer to carry the surplus stock. While prices were at a fixed basis, with no inducements for the consumers to carry stock, they have simply purchased spot according to their immediate requirements. The present tactics, it is hoped, will bring back transactions in futures. London is unchanged at £11 12s. 6d. Soft Missouri is quoted 4.05c.

**Spelter**—The market is somewhat firmer. There is, however, a noticeable lack of demand, consumers being well supplied. The metal is quoted at 4.15c. to 4.20c. here and 3.95c., St. Louis. Closing London cables to-day quoted £17 17s. 6d., an advance of 5 shillings above last week.

**Antimony**—Is unchanged. Hallett's is quoted 8c. to 8¼c.; Cookson's, 10¼c., and outside brands, 7½c.

**Nickel**—Ton lots are quoted at 50c. The market is unchanged.

**Quicksilver**—Prices are on a basis of \$48 per flask of 76½ lbs. in lots of 56 flasks or more.

**Tin Plates**—The market is entirely unchanged. The American Tin Plate Company are quoting for delivery until July 1 on a basis of \$4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or \$4 f.o.b. Pittsburgh district. London advanced 1½ pence to 13 shillings 6 pence.

John Stanton reports the copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total U.S. product.	Product foreign mines.	U. S. exports.
First half 1895.....	70,612	9,100	79,712	42,484	34,215
Second half 1895.....	84,885	6,600	91,485	43,674	30,507
Total 1895.....	155,497	15,700	171,197	86,178	64,722
First half 1896.....	94,180	7,200	101,380	42,255	58,216
Second half 1896.....	95,814	7,200	102,514	43,941	67,287
Total 1896.....	199,994	14,400	203,894	86,196	125,503
First half 1897.....	103,651	5,000	108,651	44,263	64,870
Second half 1897.....	100,555	6,900	107,455	44,007	64,340
Total 1897.....	204,206	11,900	216,106	88,270	129,210
First half 1898.....	112,687	7,800	120,487	40,880	68,284
Second half 1898.....	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84,554	145,115
First half 1899.....	111,987	12,500	124,487	43,629	56,460
Second half 1899.....	118,818	18,900	137,719	45,611	63,351
Total 1899.....	230,806	31,400	262,206	89,240	119,811
First half 1900.....	114,177	20,400	134,577	43,153	90,747
Second half 1900.....	113,810	20,400	134,104	46,278	89,335
Total 1900.....	227,987	40,800	268,681	89,431	160,082
First half 1901.....	112,794	20,600	133,394	46,847	56,027
Second half 1901.....	110,561	21,300	131,861	53,394	44,339
January, 1902.....	15,155	3,800	18,955	7,367	15,021

### Morgan Engineering Company to Increase Plant.

The Morgan Engineering Company of Alliance, Ohio, have decided to go into the manufacture of large blowing engines, they having already received a large order in this line. To enable them to do this without crippling the works in regular lines they are having plans prepared for extensive buildings to be used as machine and erecting shops. It is their intention also to erect a large structural shop for the production of traveling crane girders. Immediate steps will be taken for the construction of these extensions, and they hope to have the several buildings ready for operation by the end of next summer. At the meeting J. H. Lloyd was elected a director and his position changed from that of general superintendent to that of assistant to the president. Mr. Lloyd will be succeeded as general superintendent by Mr. Snyder, who formerly occupied a similar position with the Bethlehem Steel Company. Mr. Pettit, formerly with the E. P. Allis Company, will have charge of the mechanical end of the blowing engine department.

### The Independent Sheet Mill Meeting.

(By Telegraph.)

PITTSBURGH PA., February 19, 1902.—A second meeting of the independent sheet and black plate mills convened in the Hotel Lincoln, Pittsburgh, on Tuesday, February 18, and the meeting is again in session to-day, Wednesday. About a dozen or more concerns are represented in person, while three or four of the independent sheet mills are not present. The call for this meeting was sent out on February 11 by A. F. Baumgarten, vice-president of the Maryland Sheet & Steel Company of Cumberland, Md. An organization was effected by the election of W. L. Glessner of the Laughlin Nail Company, operating a sheet mill at Martin's Ferry, Ohio, as president, and A. F. Baumgarten, secretary. The principal question being discussed is the advisability of the independent sheet mills building a basic open hearth steel plant to supply their own steel and make them independent of the market. It is the opinion of some of the independent sheet mills that for each individual mill to build a small open hearth plant is not a wise policy, for the reason that when a reaction comes in the iron trade, as it will some time, the cost of making steel in so many small plants will be so high that the investment will not be a profitable one. It is contended that if the principal sheet mills would go together and build a large open hearth plant with their own blast furnaces, they would be in position to make steel as cheap as any of the large steel plants that are now in operation. It has been proposed to make the price of sheet bars the same at all the mills that would have stock in the steel plant, putting them all on an equal basis as regards cost of their bars. However, a few of the sheet mills that now have their own open hearth steel plant, and others that are covered on sheet bars for some months ahead, are not favorable to the project, and the ultimate action to be taken in regard to the matter is still in doubt. The meeting will continue in session to-day and possibly to-morrow, Thursday. The sheet mills report a very active demand for their product, but there is still a good deal of difficulty in getting steel as fast as needed. Some figuring has been done on foreign sheet bars, and it is found these would cost about \$32.50, delivered at mills in Western Pennsylvania and Eastern Ohio.

### The Lackawanna Steel Company.

On the 14th inst. there were incorporated at Albany with the Secretary of State the Lackawanna Steel Company of West Seneca, Erie County, a town adjacent to the city of Buffalo, with the large capital of \$40,000,000. The articles of incorporation say that the company propose to manufacture iron, steel and other metals, to operate mines and lumber lands, to erect and operate furnaces, forges, mills, foundries and other manufacturing establishments, to construct and operate bridges, ships, engines, cars and other rolling stock, slips, elevators, water works, viaducts, aqueducts and canals, and to transact such other business as may be incidental thereto. The capital is divided into 400,000 shares of the par value of \$100 each. The company will begin business with \$500,000.

The directors named are H. McKay Twombly and D. O. Mills of New York; Henry A. C. Taylor of Newport; J. G. McCullough of North Bennington, Vt.; H. Walters of Baltimore, and Samuel Mather of Cleveland.

The Lackawanna Steel Company have been organized to provide additional capital for the Lackawanna Iron & Steel Company, one of the oldest of Eastern iron producers, who were organized in 1840. The company, who were a consolidation of the Lackawanna Iron & Coal Company, and the Scranton Steel Company, both located at Scranton, Pa., are now moving to a new plant building on the lake shore, near Buffalo. It was intended at first to manufacture at the new plant about 800,000 tons annually of steel rails and steel billets. It is considered necessary now, however, to construct a much larger plant, so as to provide for the manufacture of open hearth steel on a large scale (the company having purchased the patents on the Talbot continuous open hearth process), and to produce steel plates, beams and

structural material and other finished rolling mill products. It is the intention to increase the capacity up to about 1,250,000 tons per annum and to acquire control of additional ore and coal properties to meet the demands of the enlarged capacity.

The Lackawanna Iron & Steel Company have an authorized capital of \$25,000,000, of which \$20,000,000 is issued. The holders of this stock are to have the right to exchange it for a like amount of the stock of the Lackawanna Steel Company, and have also the privilege of subscribing at par for 75 per cent. of the par value of this iron and steel stock out of \$15,000,000 of the capital stock of the new Lackawanna Steel Company, payment being made subject to certain conditions. In this manner \$15,000,000 of fresh cash capital is being raised, leaving \$5,000,000 of the stock of the Lackawanna Steel Company in the treasury.

We understand that the only lien on the property of the Lackawanna Iron & Steel Company is about \$1,800,000 of purchase bonds which the holders refuse to surrender. There is no preferred stock and there is no intervention of any bankers' underwriting syndicate. It is reported that very powerful interests financially have signified their intention to take such stock, at par, of the new Lackawanna Steel Company as is not subscribed for by the stockholders of the Lackawanna Iron & Steel Company.

### The New York Machinery Market.

NEW YORK, February 19, 1902.

Despite the wavering faith displayed in certain quarters of the trade, good business conditions continue. The question, "how long will it last," which has been asked so often during the last few months still remains unanswered. The machinery business is good, and there are no signs of an immediate collapse. By stating that business is good it is not meant that there is a great boom on. The volume of trade is simply good and healthy. Small transactions are very numerous, and they are interspersed with a few very large ones. In all lines values hold up very firmly. Deliveries are still hard to obtain, especially as regards high class engines, pumps, &c.

#### Machine Tools, &c.

Figures have just been submitted by all of the large houses on another very large list of machine tools. The specifications emanated from the Baltimore offices of the Baltimore & Ohio Railroad. The tools are to be installed in the Mount Clare shops of the road, near Baltimore. Some nice items are included in the list, one of which being 16 engine lathes. A good many heavy and expensive tools are also included. The total cost of the tools called for is conservatively estimated as upward of \$100,000.

No decision has as yet been made regarding the bids on the Springfield Armory list. The bids were opened on the 12th, and are now being properly tabulated. It is expected that recommendations will be made before the close of this month.

The Townsend & Downey Shipbuilding Company of 12 Broadway and Shooter Island, N. Y., are making inquiries preparatory to the issuing of a heavy list of machine tools. It will be recalled that previous mention of the enlargement of this concern's machine shop was made in this column. As the company are building two oil carriers, it has been surmised in the trade that the company were in some way affiliated with Standard Oil interests. The recent election of the stockholders of the company dispelled all doubt on this point. The new officers are Wallace Downey, president; Samuel Q. Brown, vice-president; James A. Townsend, secretary; John H. Cuthbert, treasurer, and N. W. Dingwell, assistant secretary. Mr. Brown is president and a director in the Tidewater Oil Company, as well as the Tidewater Pipe Company, Limited. He is also a director of the Magnetic Iron Ore Company and the Associated Producers' Company. Mr. Cuthbert is also a director in the Tidewater Oil Company and treasurer and director of the Tidewater Pipe Company, Limited, as well as a director in the Platt & Washburn Refining Company and president and director of the Associated

Producers' Company. The presence of Samuel Q. Brown and John H. Cuthbert in the directorate of the Townsend & Downey Shipbuilding Company lends color to the report that has been in the trade to the effect that this company intend building up a great plant on Shooter Island.

A number of good orders for machine tools were placed during the week by large car building concerns. Most important among these were the purchases of the American Car & Foundry Company. The tools bought are for distribution among their various plants, especially in the Pennsylvania district.

The Southern Car & Foundry Company of Birmingham, Ala., advise us that they expect to have specifications ready in about six weeks, when bids will be asked for all machinery for their new steel car plant. The company have finished grading and will shortly begin the construction of their large steel car plant on their 40-acre site, at Ensley, about 500 feet from the plant of the Tennessee Coal, Iron & Railroad Company. They expect to have the plant ready for operation by the middle of next summer. Besides the car works a large malleable iron foundry will be built.

Heavy purchases have been made by the Midvale Steel Company of Philadelphia for the equipment of the large new machine shops that have been added to their works. A large number of machine tools, it is said, still remain to be ordered. The crane order in connection with the work was awarded to Manning, Maxwell & Moore. There will be two 60-ton and two 25-ton Shaw electric cranes.

In connection with the new equipment for the Juniata and Altoona shops of the Pennsylvania Railroad Manning, Maxwell & Moore also report large orders for Shaw electric cranes. Each of these shops will have two cranes of 65 tons capacity each.

Some months ago we referred to the fact that William Sellers & Co., Incorporated, of Philadelphia contemplated the erection of a new building for the exclusive manufacture of the Lanston monotype casting machine. We are now officially informed that contracts for the building have been awarded. The building will be five stories high, 62 x 70 feet. The machinery required has been contracted for.

Quigley, Davis & Dorp, Coopers Point, Camden, N. J., marine railway, ship and engine builders, recently organized, have leased from the Pennsylvania Railroad Company the 20-acre site formerly occupied by the Morris & Mathis Shipbuilding Company, but now used by the Tway Machine Company, whose buildings the new concern have purchased. It is their intention to make a number of improvements to the yard, and as soon as these are completed the present working force will be increased and the firm will enter bids for the construction of all kinds of vessels. The members of the firm are W. H. Quigley, formerly with the Newport News Shipbuilding and Dry Dock Company, and the Neafie & Levy Shipbuilding Company, Clayton P. Davis, formerly with the late Hillman Shipbuilding Company and the Cramp Shipbuilding & Engine Company and Louis J. Dorp, formerly with the late Hillman and Neafie & Levy companies.

#### Engines Pumps, Etc.

In both high class engines and pumping machinery there is a scarcity. Certain large engine builders have arrived at the point where they simply cannot make desirable deliveries. Pump builders are very much in the same fix. This condition has been brought about by the fact that purchasers held off just a little too long. Now every one is coming in, being forced to buy, but they are not getting the deliveries they expected to obtain.

Considerable surprise and pleasure was expressed in the trade over the fact that the contract for the condensing apparatus for the New York Rapid Transit Railroad power station has been awarded to the recently formed Alberger Condenser Company, 95 Liberty street, New York. This is the largest contract ever given for a condensing apparatus, the total capacity of the outfit being 80,000 horse-power, comprised of eight units of 10,000 horse-power each. The type selected by the engineers of the Rapid Transit Subway Construc-



tion Company is the barometric condenser recently brought out by the Alberger Condenser Company. This is a jet condenser and operates on the dry vacuum system. The water, circulating and air pumps are to be operated by cross compound steam cylinders, with crank and fly wheels. The whole equipment is new and original in design and is expected to give results far in advance of those heretofore obtained, both in economy and from an operative point of view.

Woolston & Brew of 39-41 Cortlandt street announce that they have secured the general Eastern sales agency for the Brown-Corliss Engine Company of Milwaukee. Their territory will include the eastern half of Pennsylvania, the entire States of New York and New Jersey and the New England States. The new Brown Company will build vertical and horizontal engines from 150 to 10,000 horse-power. In taking the representation of the Milwaukee company Woolston & Brew discontinue the handling of the product of C. H. Brown & Co. of Fitchburg, Mass. They have already made several sales for the Brown-Corliss Engine Company. Two 250 horse-power engines have been sold for installation in the Roosevelt Hospital, New York. To J. B. King & Co. of Staten Island they have sold a 1000 horse-power tandem compound and to the Cohasset Electric Light Company of Boston a 350 horse-power tandem compound.

The Amoskeag Mfg. Company, Manchester, N. H., are supplementing their present power plant with a 2500-kw. General Electric generator and motors from the same company. The generator will be driven by a McIntosh & Seymour vertical cross compound engine, cylinders, 33 and 66 inches in diameter and 48-inch stroke, running 120 revolutions per minute. Steam will be furnished from 12 Manning boilers fitted with Jones' underfeed automatic stokers. The present power plant consists of about 10,000 horse-power of water wheels and 10,000 horse-power of steam engines. It takes about 13,000 horse-power to run the mills, so that the additional steam plant will enable the company to run their entire plant when there is no water power available. All contracts for equipment have been let.

Subcontracts have been let by John Pierce of 277 Broadway for the mechanical equipment of the Hall of Records Building. G. A. Suter received the steam heating contract. Babcock & Wilcox boilers will be installed. The electrical contract, which includes the engines as well as the electrical equipment, was awarded to Charles L. Eldlitz of 1133 Broadway.

#### Miscellaneous.

The Brown Hoisting Machinery Company of 26 Cortlandt street and Cleveland have just closed the largest contract for conveying machinery which has been made in several years. The apparatus consists of a complete modern ore handling equipment for the new blast furnace plant being erected at Clairton, Pa., by the St. Clair Furnace Company. The plant will be one of the finest ever installed, and will cost about \$500,000. It will consist of a car dumper, two bridges and 200 feet each of iron ore and coke bins, and will be completed in time for the operation of the furnaces next fall. In connection with this work the Elwell-Parker Electric Company of 85 Cortlandt street and Cleveland received an order for some 20 electric motors, ranging from 300 horse-power down.

The National Radiator Company of Johnstown, Pa., a new concern, formed to take over the entire business of the Fowler Radiator & Mfg. Company, inform us that they are enlarging their plant.

The Sharon Foundry Company have been organized with a capital of \$250,000 and will build a large new foundry between South Sharon and Wheatland, Pa. Identified with the new concern are Robert Bentley, W. J. and Frank Hitchcock, pig iron manufacturers in the Mahoning Valley. The new concern will manufacture a general line of blast furnace, steel plant and rolling mill machinery, ingot molds and iron and steel castings. The officers are Joseph Riddell, president, and Thomas Kennedy, secretary and treasurer.

## PUBLISHERS' ANNOUNCEMENT.

### WHAT SHALL WE CALL IT?

THE MOST VALUABLE, THE MOST CONVENIENT AND THE MOST WIDELY CIRCULATED CLASSIFIED DIRECTORY OF THE METAL TRADES OF THE UNITED STATES.

"THE IRON AGE INDEX SUPPLEMENT," a directory of the goods and machines made by over 1300 regular advertisers in *The Iron Age*, has been annually issued in pamphlet form. This year it will appear as A CLOTH BOUND BOOK, convenient for desk use. It will be an elaborately classified directory of the American Hardware, Iron, Machinery and Metal trades, from Pig Iron to Dental Wire, from Drills to Locomotives. It will be furnished free to all subscribers. In its new form it deserves a title more appropriate to its character.

What shall we call it?

A PRIZE OF ONE HUNDRED DOLLARS will be paid to the person first suggesting the title we may ratify by adopting it.

The facts are:

It will give the names and addresses of makers of over 4,000 different articles manufactured by advertisers in *The Iron Age*.

How elaborate and comprehensive is the classification may be judged from the fact that 32 headings are devoted to distinguish the various kinds of Bells; Bolts have 48 headings; Castings, 36; Chains, 43; Drills, 47; Lathes, 32; etc., etc.

The name and address of each manufacturer will be inserted under as many headings as are required to fully cover his line of goods.

It will contain the names of none but advertisers in *The Iron Age*.

It will contain no paid matter or advertisements.

The number of names in the last issue under each heading ranged from 1 to 83.

A copy of the book will be furnished FREE to every subscriber to *The Iron Age*.

It will thus have a general circulation among the Iron, Hardware, Machinery and Metal Trades, including purchasing agents of much more than half the railroad mileage in the United States, and to subscribers in over 500 places in foreign countries.

It will be the most valuable, the most convenient and the most widely circulated classified directory of the Metal Trades of the United States that has ever been issued.

Its contents, convenient form and wide circulation will give it great value to both buyers and manufacturers.

For the expense and labor of its compilation and distribution we will receive no direct return, but we believe its utility to our subscribers and its advantage to our advertisers will amply repay us.

Suggested titles must be submitted in writing. They will be considered in the order of their receipt. Any number of titles may be submitted by one person. Our decision of all questions to be final. Address: "Title Competition, *The Iron Age*, 232-238 William Street, New York."

# HARDWARE.

THE manufacturers of this country are enjoying an era of matchless prosperity, as measured by the volume of transactions and the resultant profit. The problem for the future is how to maintain it. Nearly every enterprising manufacturing center has witnessed a marked increase in capacity during these years of well being, the direct result of higher prices and active demand. Nearly every portion of the world is looking toward us for supplies of some kind, either manufactures or raw materials, the products of farm, forest or mine. A good merchant uses his ability to forecast the course of things, to anticipate a possible shrinkage in the volume and profit of his business. That the laws of supply and demand at the present high rate of production will ultimately lead to low prices is certain, and, as surely, a falling off in the demand and accompanying depression are to be looked for. When the reaction comes some manufacturers will recognize their lack of foresight in neglecting to cultivate the foreign field.

The wisdom of preparing intelligently and systematically for less favorable conditions is illustrated in the policy pursued by some of the large consolidations in various lines. These great interests are already establishing branches in important foreign markets, where, with their forces on the ground and their expert knowledge, they are preparing to attract and hold business. Evidence of the success of these efforts is seen in the constant extension of American trade, which is regarded with so much apprehension by England and the Continent. A similar spirit is shown by other manufacturers whose position is less conspicuous, and whose products, as the result of their enterprise and energy, are finding their way into many foreign markets.

The next great depression will emphasize the wisdom of this policy, as those who have pursued it will be in an exceedingly advantageous position when the domestic demand relaxes. At the same time it will drive manufacturers who have been satisfied with the home trade to look for foreign business, probably under much less favorable conditions than exist at present. There is little doubt of the ultimate result. Our unparalleled resources in mineral and agricultural products, our vast and diversified manufactures, our transportation facilities on land and water, the spirit and ambition of our merchants and manufacturers, give exceptional advantages that will win in the end. Those, however, who are first in the field will have an important advantage over their shortsighted competitors. The foundation work, necessarily slow, will have been done and the building up of trade will be comparatively easy. If, however, no preparation of this kind has been made, if the goods are strange to the market, and possibly require modification to adapt them to it, if no channels for their distribution have been arranged, it will necessarily require time and expense to establish relations which will result in anything like a satisfactory volume of business. The matter should therefore be taken in hand in these days of prosperity, when the foreign business is not greatly needed, the product being readily disposed of at home. Conditions for cultivating export business are too favorable to be neglected.

We still continue to receive many inquiries from houses who do a jobbing business of comparatively limited extent in connection with their retail trade, asking how they can obtain recognition as jobbers. It may be

presumed that their object is to enable them to buy at jobbers' prices. The inquiry, however, is based upon the supposition that there is a list of jobbers, who in the virtue of their representation on such list are entitled to jobbers' prices on all lines of goods. This is a misapprehension. The relation between the manufacturers and the trade are not determined in such manner, but depend on special consideration in each case. A house may be on the list of jobbers for one line of goods and not for another. In many lines also there is no formal jobbers' list which has been agreed upon by the manufacturers to control the making of prices. This is the case in almost all lines where there is an open market, while on the other hand, where there is a rigid agreement in the form of pool or combination of some kind in regard to prices, such lists are generally used. Where there is no such formal regulation of the matter manufacturers are free to give jobbing prices to any house they may choose thus to favor, and, in matter of fact, often give such prices to comparatively small houses when they deem it a good business policy. This being the condition of things, there obviously is no such thing as "the jobbers' list" in the sense in which the expression is sometimes used. There are many jobbers' lists relating to special lines, and there are many lines in which the question of obtaining jobbers' prices is not determined in any such classification of the trade, but by negotiations between the merchants and the manufacturers. Merchants who are doing a jobbing business, even of a limited extent, should have comparatively little difficulty in obtaining favorable terms, for such houses, if thoroughly responsible, prompt in payment and able to sell a fair quantity of goods, are, in the estimation of manufacturers, very desirable customers.

## Condition of Trade.

The trade in several sections is feeling the effect of severe winter weather, which tends to reduce slightly the volume of current business, which, in spite of this influence, continues large and steady. The jobbers and others who visit the retail trade are fully occupied, their travelers sending in well filled order sheets and reporting an excellent feeling among business men at large. It is evident that labor is well employed, factories in almost all lines running to their full capacity and new enterprises being engaged in with a confident and liberal spirit. The demand for structural iron and the reports of architects and builders, as well as those from manufacturers and merchants, agree that building during the present year is going to be exceptionally active, as buildings of almost all classes are being projected with unusual enterprise. The demand for Builders' Hardware is already large and beyond the capacity of manufacturers to supply promptly. There does not seem to be an immediate prospect of a change in this respect. In quite a good many lines the manufacturers are finding their factories overtaxed and delay is occasioned in the execution of orders. On the other hand some of the factories are catching up with orders and are making shipments more promptly than for some time. In only exceptional cases is this causing anything of a softening in prices, which are given firm tone by the condition of the iron market, the large demand and the gradually increasing cost of production on account of advances which have taken place in wages. The cost of living being also materially increased as the result of the higher prices ruling for food and practically all the necessities of life is a fact underlying the growing cost of goods. The gradual changes in the values of Hard-



ware during the week in review are comparatively unimportant. The progress which has been made in the direction of consolidation of Axe Interests gives evenness to what has for some time been a low and demoralized market. Slightly higher prices are also resulting in this line. Other changes are for the most part in the direction of a revision of quotations, which often results in the withdrawal of concessions which have heretofore been made. Export business continues large and varied in the character of goods sent out of the country to an increasing number of foreign buyers.

### Chicago.

(By Telegraph.)

The recent snow storms and much colder weather have checked outdoor activity, causing a falling off in demand for Building Material, but other goods are going out freely. A shortage in Wire products, especially Wire Cloth and Poultry Netting, seems inevitable. It is stated that the factories are now unable to take more orders for delivery this season and jobbers are fast getting into a condition which will compel them to stop making sales. Prices show a general tendency to advance. This is being resisted as much as possible, but if Iron and Steel move up much further finished products will probably go with them.

### St. Louis.

(By Telegraph.)

Our report of last week citing the general state of trade in the market for Hardware cannot be modified this week, as the same conditions of active and strong demand hold good at this time. The extensive building operations being carried forward in this city makes a strong local demand for Builders' Hardware, and as milder weather approaches this demand is likely to increase. As noted in previous reports, the buying is well distributed, and the liberal scale on which the dealers are placing their orders bodes well for the future of the market. We hear no complaints from the heavy department of the market, and the quality and quantity of demand is said to be of a very satisfactory order.

### San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—Under the title of the new firm who have succeeded Miller, Sloss & Scott, we are now addressing our first communication to you as regards the trade on the Pacific Coast. This year so far has been the driest season we have had for a long time, and a great deal of anxiety is expressed over the condition of the crops, particularly in the San Joaquin Valley and Southern California. The last few days we were favored with a few showers, which has brightened up considerably the hopes of those who predicted a dry season.

The demand for all kinds of Hardware is good and the supply here is adequate, except Structural Material. Beams, Channels, &c., are very scarce in San Francisco, and as the mills are very slow in their delivery this stops building operations on the large buildings now being erected.

The farming interests in the northern part of California are in good shape and Agricultural Tools are now being called for.

The situation summed up is that prospects are good for a profitable year to the mercantile community on the Pacific Coast.

### Louisville.

W. B. BELKNAP & Co.—The main report from this market just now, if it dealt with those things which concern us most, would be meteorological in its character. We are all simply wondering when the icy grip of winter is going to let go its hold. We have now the third week of it since the great sleet storm fell which deposited 3 inches of solid ice on all of our roofs, streets and trees, bringing great destruction and absorbing our best efforts to dig out. One snow after another has fallen on top of this, and despite an occasional gleam of the sun, which by this time of year has some-

thing to say from its northering course and longer hours, we have had little to encourage us. It has made shipping extremely difficult. Communication between Kentucky towns hereabouts has been as in Holland—on skates and in sleighs.

With all this there is an excellent demand for goods, particularly Bar Iron, Steel Sheets, Angles and everything which goes into construction, as, of course, a little further south than this the rigors of the situation are not so severely felt.

As long as the demand exceeds the supply there is no trouble keeping a steady or steadily advancing market. The subject of the supply of fuel is always a burning one, and the difficulty of getting a sufficient quantity mined and transported when once on top of the ground is still one which is not overcome.

The cost of living has been somewhat further increased by a soap trust, which has put up the price of ordinary soap about 20 per cent. at one move. The writer overheard in one of our prominent book stores that the publishers of bibles had got together, and the inspiration for godliness was going to take its place next to that of cleanliness in submission to trust control. As this is not strictly in the Hardware line, we cannot vouch for the truth of this statement, but it may be that the Scriptures are next in the line of enhanced values. For aught we on the outside can tell, some syndicate may be arranging for a merger with the Apocrypha.

### Cleveland.

THE W. BINGHAM COMPANY.—The Hardware trade in Cleveland is exceptionally good at the present time. We are surprised at the large number of well assorted orders for general Hardware that our salesmen are sending in from every section of the country, especially for immediate shipment.

The demand for Carpenters' Tools, Hammers, Hatchets, Fancy Planes, Auger Bits and Chisels is particularly good, and as our trade in this line of goods has been exceedingly large during the past year, the orders for these goods now indicate to us that labor is well employed, that carpenters have been unusually busy for the past year and expect to be during the coming season.

The outlook for general trade in this section for the present, as well as the future, is very bright. The manufacturers in some lines are catching up on back orders, and we are now accumulating a stock so that we can supply our customers promptly. We are paying particular attention to voluntary or mail orders, and they are coming to us in good volume, because we are able to take care of our customers promptly.

Our customers seem to have plenty of money with which to discount their bills, which goes to prove that the Hardware business is at present prosperous and certainly remunerative to the retail dealers.

Our prices on general goods are so low that none of our customers seem to be afraid to stock up quite liberally.

### Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The business being done and the outlook for the future, both as regards city and country trade, are rarely exceeded at this time of the year. The architects' offices have as much, if not more, work to start the season than they had last year, although the cost of building is very much greater than two years ago. Laborers and mechanics are well employed at full wages, the union having made at least two advances during the past year, in shorter hours and increased pay.

In the country a large crop of wheat has been practically sold on a rising market, a satisfactory condition for the producer. Hops are well cleaned out, so that there is no carry over, as there often is, as a menace to coming crop. Wool, too, has been well sold, so that the new clip should command a good sale. Charters for sailing vessels are declining, and as every shilling drop means more for wheat at this port, the farmer will benefit at ship owner's expense. Altogether we thank God our lot is "Where rolls the Oregon."

### Philadelphia.

**SUPPLER HARDWARE COMPANY.**—Trade during the past week we feel has been quite up to the average of one year ago.

**Barbed Wire and Wire Nails.**—The experience in this market in regard to these two items is that the demand has been in excess of one year ago, with prices held more firmly to the manufacturers' present figures to the retail trade than was the case earlier in the season. The trade appear to be apparently ignoring the outside competition which then existed of meeting prices where some outsiders were selling short expecting to recoup by declines. The tables have turned in that respect, and a gradual advance appears to have temporarily at least killed that unbusinesslike competition.

**Axes.**—Reports have reached us of an advance in Axes, although full particulars are not yet obtainable. From what we hear, however, the former plan of limiting the amount of orders accepted for Second-Quality Axes to a certain percentage of the purchase of high grade Axes has not been eliminated. We all remember the old song of, "The waiter roared it through the hall, we don't give bread with one fish ball." That song might be changed to, "We give but one roll with ten fish balls, and persons who want a smaller number of fish balls get a limited supply of rolls." We trust we are mistaken in this information. We can hardly conceive how the new syndicate could adopt such unsavory measures, and while the price of Second-Quality Axes has advanced from what we hear fully 75 cents a dozen they still limit the quantity. It looks to the average man the only reason is the second quality may be equal to the first quality. There can be only one other construction to it, that factories' special brands are not looked upon as so valuable by the trade at large as the factories chose to look upon them. However, you pay your money, but you don't have your choice.

**Steel Goods.**—There is a stiffening in the market price of Steel Goods, owing to the fact that various manufacturers have withdrawn quotations. Further, the information reaches us that manufacturers, as a rule, have booked orders equal to their capacity to produce for the next six months.

**Hardware Organizations.**—The trade is naturally interested in the annual meetings of the various State Hardware associations which have been held during the month of January, and will be held during the months of February and March. The annual addresses of the presidents of these organizations certainly show considerable thought and exhibit the fact that nearly all of them have matters pertaining to the betterment of trade well in hand; and they certainly should, and we believe do, feel they have the full sympathies of the jobbers and the desire to aid them wherever possible to correct existing irregularities in trade which are so demoralizing to the retail trade. We do not see how any manufacturer can ignore the corner stone of the National Hardware Association—namely, "A high standard of business methods," nor do we for a moment see why they should not recognize the fact that there are certain channels through which some of them distribute their goods which are demoralizing alike to other manufacturers, who refuse such opportunities to dispose of their goods, as well as to both wholesale and retail merchants.

Collections are comparatively fair.

### NOTES ON PRICES.

**Wire Nails.**—The demand for Wire Nails is large and active. Recent storms added to the insufficiency of transportation facilities have temporarily increased the difficulty of getting prompt mill shipments. The market is strong, and is represented by the quotation in carload lots of \$2.05 to \$2.10, f.o.b. Pittsburgh, plus actual freight to destination.

**New York.**—The recent snow storm, which interfered greatly with local transportation, has caused a falling off in the store demand for Wire Nails during the week. The market is represented by the following quotations: Small lots from store, \$2.25 to \$2.30; carloads on dock, \$2.18 to \$2.20.

**Chicago, by Telegraph.**—Manufacturers of Wire Nails report a continued heavy demand, which is not only taking their current production but has seriously broken their stocks, causing them to fall behind in making shipments. They look for a still larger trade next month. Jobbers report their trade not so heavy as in January, but the volume of business is still quite large. Single carloads are held at \$2.20 and small lots at \$2.25 to \$2.30.

**St. Louis, by Telegraph.**—Business in Wire Nails is said to be on a good scale, and generally firm prices prevail. Small lots from store are quoted at \$2.35.

**Pittsburgh.**—The unfavorable weather of the last couple of weeks has perhaps affected demand for Wire Nails to some extent, yet a good many orders are being placed by the large jobbing houses and small buyers as well, in anticipation of a heavy spring trade. The recent advance in prices is, we are advised, being firmly held. We quote Wire Nails in carloads and larger lots at \$2.05, and small lots at \$2.10, f.o.b. Pittsburgh.

**Cut Nails.**—The Cut Nail market continues firm and steady at former quotations. The regular monthly meeting of the Cut Nail Association has been postponed until March 4 to secure the attendance of all the members. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$1.95
Less than carload lots.....	2.00

**New York.**—The local demand for Cut Nails has been somewhat interfered with by the holiday and storm during the week. New York quotations for carload and less than carload lots are as follows:

Carload lots on dock.....	\$2.08
Less than carload lots on dock.....	2.13
Small lots from store.....	2.20

**Chicago, by Telegraph.**—The adjustment of prices to \$2.20 for small lots brings Cut Nails on a better footing with Wire Nails, and causes a somewhat larger demand.

**St. Louis, by Telegraph.**—Cut Nails are not in very large demand and the quotation for small lots from store continues to be \$2.30 to \$2.35.

**Pittsburgh.**—We note a moderate demand for Cut Nails and the tone of the market is very firm. Mills are able to ship out their product of Cut Nails on orders about as fast as made. We quote Cut Nails at \$1.95, base, in carload lots, and \$2 in less than carload lots, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination.

**Barb Wire.**—The demand for Barb Wire at mill for spring delivery is large, with a prospect of increased activity until the spring trade commences. Quotations for round lots are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.60; Galvanized, \$2.90; less than carload lots, Painted, \$2.65; Galvanized, \$2.95.

**Chicago, by Telegraph.**—The leading manufacturers report the demand for Barb Wire running much in excess of anything previously known. Their increased capacity does not enable them to keep up with business, but they are in arrears and are falling further behind every day. Jobbers are having a good trade, but it is not quite so heavy as in January. Single carloads are selling at \$2.80 for Painted and \$3.10 for Galvanized, with 5 cents extra for small lots.

**St. Louis, by Telegraph.**—Barb Wire continues to move in a way satisfactory to the jobbers, and the demand is referred to as being of considerable volume. Jobbers quote carload lots at \$2.95 for Painted and \$3.25 for Galvanized.

**Pittsburgh.**—We note a good demand for Barb Wire, jobbers placing liberal orders, getting ready for spring trade, which promises to be very large. We quote Galvanized Barb Wire at \$2.90 in carloads to jobbers and Painted at \$2.60, terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh. For small lots higher prices are charged.

**Plain Wire.**—Manufacturers of Plain Wire have their facilities taxed to keep up with demand. The market



is strong and prices are being firmly adhered to. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots.....	\$2.00	\$2.40
To jobbers in less than carload lots.....	2.05	2.45
To retailers in carload lots.....	2.10	2.50
To retailers in less than carload lots.....	2.20	2.60

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9.....	Base.....	\$0.40 extra.
10.....	\$0.05 advance over base.....	.40 "
11.....	.10 " " " ".....	.40 "
12 and 12½.....	.15 " " " ".....	.40 "
13.....	.25 " " " ".....	.40 "
14.....	.35 " " " ".....	.40 "
15.....	.45 " " " ".....	.75 "
16.....	.55 " " " ".....	.75 "
17.....	.70 " " " ".....	1.00 "
18.....	.85 " " " ".....	1.00 "

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

**Chicago, by Telegraph.**—The capacity of Plain Wire factories appears to be fully taken up by the strong demand, notwithstanding the increase in capacity made by the old manufacturers, as well as new establishments. Jobbers quote small lots from stock at \$2.20, base.

**St. Louis, by Telegraph.**—The jobbers are having a good trade in Plain Wire, and no change is to be noted in price: No. 9 at \$2.30, and Galvanized at \$2.70, with the usual advance for other sizes.

**Pittsburgh.**—We note a continued heavy demand for Plain Wire, and the market is very firm. Spring trade this year promises to be heavier than ever before. We quote Plain Wire at \$2 and Galvanized \$2.35 in carloads, f.o.b. Pittsburgh, usual terms. For small lots from \$2 to \$3 a ton higher prices are charged.

**Augers and Bits.**—Existing prices of Augers and Bits were confirmed by the manufacturers at a meeting held on February 12.

**Axes.**—As referred to more fully in another column in connection with the notice of what is being done by the Axe manufacturers in the way of consolidation, prices on this line of goods are slightly higher. The advance is from 5 to 10 per cent. on the leading goods. The manufacturers on the 17th began marketing their product for the coming season, thus putting the new prices into effect. While it is anticipated that the market will be quite regular, as the new prices are strictly maintained, there will probably be a good deal of enterprise shown by the manufacturers in securing orders for their various factories.

**Sash Weights.**—The manufacturers of Sash Weights are working together with a good degree of harmony and have recently been giving careful attention to the question of the cost of production and the relation which costs should bear to the selling price. As the result of this we understand that some of them who were making exceptionally low quotations have withdrawn their prices, and the market is thus somewhat more even than heretofore. The high price of the raw material and the difficulty in many cases of obtaining it has also a tonic effect on the market.

**Cordage.**—Sisal Rope has been advanced to 9¼ to 10 cents per pound, on the basis of 7-16 inch and larger, by some manufacturers, on account of the higher price of the raw material. Other manufacturers who have a stock of fiber on hand are quoting at 9 cents per pound. The lower price may be raised at any time, as the cost of the raw material justifies an advance. Manila Rope is quoted at 13 cents per pound on the same basis. Demand for Rope is moderate.

**Chisels.**—The Chisel manufacturers, at a meeting held on February 13, confirmed existing prices.

**Binder Twine.**—Prices made on Binder Twine by some of the manufacturers are as follows, f.o.b. New York, with ¼ cent per pound rebate in carload lots:

	Per pound.
Sisal .....	10¼c.
Standard .....	10¼c.
Manila .....	13¼c.
Pure Manila.....	14¼c.

Some manufacturers are guaranteeing these prices to May 1, date of shipment.

**Glass.**—The situation in the Window Glass market remains unchanged. One result of the cut in prices made by the Independent Glass Company has been to restrict buying to immediate needs. While there is a possibility of higher prices being made by the American Window Glass Company later in the season, there is no evidence of speculative buying. The following are the quotations of the Jobbers' Association:

	Discount.
From store.....	.90 and 10 %
F.o.b. factory, carload lots:	
Single strength.....	.90 and 10 and 7½ %
Double strength.....	.90 and 10 and 10 %

Seven of the Plate Glass factories, which represent almost the entire productive capacity of the country, have agreed, it is reported, to close down their works during the month of July this year. It is further rumored that a general 5 per cent. reduction will soon be made in Plate Glass prices. The causes of these changes in policy are alluded to as being the large increase in the domestic producing capacity and the demoralized condition of the foreign industry, which threatens still heavier importations.

**Paints and Colors.**—**Leads.**—The demand for White Lead in Oil continues good for the season, and some of those ordering want the goods shipped at once, so as to secure their delivery in the near future. In large lots there is some shading reported from regular quotations, which are as follows: In lots of 500 pounds or over, 6 cents per pound; in lots of less than 500 pounds, 6½ cents per pound.

**Oils.**—**Linseed Oil.**—Buying in Linseed Oil has been more active for the past two weeks. Prices which have been in force since January 29, 1902, continue to rule, and are as follows: City Raw, 63 to 64 cents, according to quantity; out of town Raw, 62 to 63 cents, according to quantity. Boiled Oil is 2 cents per gallon advance on Raw.

## RUSSELL & ERWIN MFG. COMPANY.

**T**HE RUSSELL & ERWIN MFG. COMPANY, New Britain, Conn., held their annual meeting February 5, at which the old Board of Directors was re-elected. This meeting was adjourned one week, to the 12th inst., when L. H. Wales resigned as general manager and treasurer, and also as a director of the company, on account of ill health. To fill the vacancy caused by Mr. Wales' resignation from the Board of Directors, Howard S. Hart was elected. Mr. Hart is the son of William H. Hart (president of the Stanley Works) and member of the firm of Hart & Cooley. He is a young man of great executive ability and succeeds to the position of general manager of the Russell & Erwin factories.

The following officers were elected by the directors after these changes were made: President, George J. Loughton of New York; vice-president, Howard S. Hart; secretary, Theodore E. Smith, and assistant secretary, Isaac D. Russell, all of New Britain; and assistant treasurer, Edwin Meyer of New York. The position of treasurer was not filled at the meeting, and the vacancy will be left open for future determination.

**EDWARD G. WATKINS** announces that the business heretofore carried on by him under the name of the Simplex Time Recorder Company, Gardner, Mass., has been transferred to a new corporation organized under the laws of Massachusetts, who will continue under the same style. Mr. Watkins is president of the new company and M. A. Creed secretary and treasurer. The directors are Messrs. Watkins and Creed and George O. Sawin.

**THE PETERS CARTRIDGE COMPANY**, Cincinnati, Ohio, are greatly annoyed at a report circulated to the effect that they have sold a block of their stock to the Ammunition Association, and have joined that association. They deny that there is the least foundation for any such statement, and state that they are absolutely independent of all other manufacturers in their line and propose remaining so.

## Missouri Retail Stove and Hardware Dealers' Association.

**T**HE fourth annual meeting of the Missouri Retail Stove and Hardware Dealers' Association opened its two days' session in St. Louis, at the rooms of the Mercantile Club, shortly after 10 o'clock on Tuesday morning, 18th inst. The membership present at that time was not large, there being less than 75 in attendance. After being called to order President B. F. Naylor, Marshall, proceeded to deliver his annual address, in which he briefly and carefully gave the conditions as they exist in the organization, and what the members have to face for the future.

Following the president, the secretary, Frederick Neudorff of St. Joseph, presented his annual report, which, on motion, was accepted by the convention.

A paper on "Association Loyalty" was then read by Taylor Frier of Louisiana, which is given on another page. Call was then made for the paper of August Steinmeier of St. Louis, but after consideration it was concluded to let this be presented at a later session. The secretary then proceeded to read several communications, some welcoming the delegates to the city, and others from members regretting inability to be present.



B. F. NAYLOR, President.

An extract from the president's report of the National Jobbers' Association was requested by vote of the members to be read.

Invitations for the payment of dues were extended, and signing by the secretary of railroad tickets for the return trip of the delegates consumed some time at this point.

The chair then brought up the subject of the banquet which was planned in the visitors' honor, and in a graceful speech thanked the local association for the honor, but expressed regret that it had been planned, as he felt that visiting delegates did not come for entertainment and pleasure, but for hard work, and he feared that entertainment of this kind was apt to distract their minds from the real object of the convention. J. W. Poland of Carrollton followed with a short talk in the same strain.

A. F. Geschwindner and F. A. Kansteiner answered the remarks of the two gentlemen in a happy and cordial way and said that the plans had been carefully arranged for this event, and that the local association did not consider the convention complete without this banquet, as it served to make friendships stronger to meet as a body about the festive board.

Taylor Frier of Louisiana proposed that a special invitation be extended for new members. J. W. Poland strongly advocated promptness and strict attendance to the sessions during the meeting and implored all members to take an active interest in the proceedings. The chair strongly supported these remarks.

Mr. Best of Palmyra made a motion to appoint a committee to amend by-laws, and it was carried. The chair named as the committee Messrs. Best, Poland and Kansteiner.

The chair requested all who had complaints or grievances to file them with the secretary before the afternoon session.

Mr. Best then spoke of the past methods of work and urged that there be in the future more unity of purpose and higher plan of action. After some more remarks by the president on the various committees and their work, adjournment was taken until 2 o'clock in the afternoon.

### AFTERNOON SESSION.

The convention reconvened and was called to order about 2.25, and, following some informal discussion by Frank Mayer of Macon and O. W. Johnson of Marshall the paper on the "Evolution of the Hardware Business, 1850-1901," by Wm. Kansteiner of Hannibal was read by F. A. Kansteiner of St. Louis. This paper is given on another page.

The Question Box was then decided as the next order of business, and the paper prepared by Louis Hering of Blackburn was read by the secretary. Several gentlemen were then called upon by the chair for remarks, but declined under the plea of not being prepared.

P. E. Harney, ex-president of the association, was next presented to the convention and gave a timely talk on the benefits to be derived from proper organization, telling of the general character and class of buyers that the Hardwaremen have to deal with, and how the disaster resulting from the cutting of prices could be overcome if a proper co-operation could only be brought about by a more general interest and membership in the present organization.

Mr. Best, as chairman of the Committee for the Revision of the By-Laws, was next called upon, but asked that their report be deferred until Wednesday.

### Co-operative Insurance.

The chair introduced for discussion the subject of co-operative insurance, and the first response was from J. M. Kenyon of Maitland. Mr. Kenyon gave information in connection with the Western Retail Implement and Vehicle Dealers' Underwriters' Association, of which he is a member. He stated that this organization was in a most satisfactory working condition and that he could testify personally to a great saving in the matter of his insurance account.

The secretary next read a pamphlet and statement of the financial condition of the co-operative insurance association connected with the Minnesota Retail Hardware Dealers' Association.

In answer to the suggestion that the Missouri Association be organized in this insurance matter, Louis Hering counseled them not to at this time, as he felt that they were not strong enough. F. A. Kansteiner suggested that the secretary be instructed to send notices to the different members, asking them if they would support a movement in this direction.

Mr. Hering was again heard from, and stated that he did not believe that such a company should be formed unless it had a backing of at least 200 merchants.

### Organization.

F. B. Haus gave a strong talk on organization, and stated his views in regard to the enrollment of dealers throughout the State, saying that if they will not enroll through the ordinary means of invitation by mail they should be got into line by personal solicitation, by pointing out to them the advantages and benefits that would come directly to them by membership in the association.

### Address by R. W. Shapleigh.

R. W. Shapleigh of the Norvell-Shapleigh Hardware Company, St. Louis, and ex-president of the National Hardware Association, was next called on for an address, but he first stated he had no regular paper prepared, and said in part that he was very pleased to see



so many representatives of the retail dealers of the State of Missouri. He considered the purposes and aims of the association most excellent, and believed that such organizations were a benefit to their membership throughout the country. He further believed that the coming together of the dealers from the different sections of the State, to discuss methods, could not fail to be beneficial to all concerned. Merchants in business should not be of the idea that they know it all and that they cannot receive benefit from meeting with others in their line, and he thought that this intercourse, which was only brought about through organization, could not be measured in dollars and cents. Great friendship was felt by him for organizations of this kind. The feeling of rivalry will lose its vindictiveness if dealers will come together with the idea to form a closer and greater friendship and to adopt a much higher plane of methods. It cannot be expected that immediate returns will result, as it takes time for such accomplishments, but advancement and benefits are sure to come in time. A hearty



FREDERICK NEUDORFF, Secretary.

welcome was extended to the visitors, and every effort, he stated, would be made to make their stay profitable and pleasant.

#### Non-Members.

Some discussion followed as to the best method of reaching the dealers of the State who are not now members of the association. On this subject Taylor Frier, A. H. Gruendler and F. A. Kansteiner were heard from.

J. F. Bannon of St. Louis next gave a good general talk on furthering the welfare of the organization, and urged that more interest be manifested in the work, and that the membership be shown the necessity of co-operation. He urged the members to come together for work, and thus success would be inevitable. Mr. Bannon stated that the Missouri Association started under most auspicious circumstances, and that it was bound to grow and succeed.

Mr. Barclay of the St. Louis Credit Men's Association was the next speaker, and read an interesting paper, which we will publish in a future issue.

The general programme being completed for the afternoon, the convention adjourned to meet in executive session.

An enjoyable and successful banquet was served in the evening.

#### Evolution of the Hardware Business—1850-1901.

BY WILLIAM KANSTEINER, HANNIBAL, MO.

Fifty years is quite a space of time, and to review some of the events, even mentally, is like rewinding a grand panorama. The future history will record the vast changes that have taken place during the last century in mechanics, art and science, which are almost incomprehensible. Take St. Louis, for instance. Fifty-five years ago it was a city of about 50,000 inhabitants without artificial means to light the streets, excepting a few oil lanterns. Rapid transit consisted in

three omnibus lines, north, west and south, propelled by horse power, and not always very reliable. There was no street railway, electric power was not even dreamed of, no telegraph, no railroad, at least not in Missouri, very little in Illinois. All commerce depended on steamboat and canal boat. Interior civilization had to depend on the peddler wagon and other vehicles, not to forget the noble ox team; traveling, besides steamboats, had to be done on foot, horseback and stage coach.

#### TRANSPORTATION OF MERCHANDISE

consumed a great deal of time. St. Louis merchants would consider themselves fortunate if they received a shipment of heavy goods from the far East (as it was called) inside of two months. Transportation was by sailing vessels down the Atlantic Coast to New Orleans, and from there by steamboat up the Mississippi River. Light goods would come by canal from Philadelphia to Pittsburgh, then down the Ohio River by steamboat around by Cairo. Another route was by the New York canal to Buffalo, thence by lake to Chicago, down by canal and steamboat on the Illinois River, reloading the same four times. This inland transportation would consume about four weeks at least. This would only do, though, in warm weather. When the canals, rivers and lake would close with ice the trade had to go in winter quarters, so to speak. The writer has seen Main street, which was then the wholesale part of St. Louis, in the latter part of January almost deserted. The retail merchant had to have sufficient stock to carry him through the winter, especially in the Hardware trade. It was not customary to buy so frequently as now. Traveling men were not known. The merchant doing business away from these wholesale centers would make one or two trips a year to buy goods sufficient for a certain time. This mode of business would now be very unpleasant and inconvenient. At that time people would take life more easy. Business had more pleasure. Customers would wait a month or longer for certain articles and not become impatient.

#### PRICES WERE STEADY.

there being very little fluctuation. Nearly every article was bought and sold at a net price, no strings of discount to figure. For 15 years the price-list of Wood Screws did not change 1 cent, the discount remaining 25 or 30 per cent, according to place of purchase. Goods could be bought cheaper in Cincinnati than in St. Louis, and cheaper in New York than in Cincinnati, but transportation, exchange and mail would more than equalize the price in small shipments. In 10 years the price on Nails dropped from \$2.75, base, to \$2.62½, base, and so pretty much in the whole line, very little change in price. If stock got low, we would buy to keep up the assortment; no need to figure prices or being afraid goods would soon be cheaper. Very little change in style or make of goods took place.

#### THE ASSORTMENT

was very limited, about one-tenth of what it is now, except in Cutlery, which trade was left entirely to the Hardware dealer. In Edge Tools, about four kinds of Axes, eight kinds of Saws, but a full line of Tang Firmer Chisels and Socket Framing Chisels, Wooden Braces with a lot of small Bits, a full assortment of old-time Bench Planes and Molding Planes would make a good stock of Tools. Free delivery and delivery wagons were not known until 1855 or 1856, and then only for retail groceries. When the goods had been sold the further expenses were all charged to the buyer—namely, package, cartage and freight—and this rule regulated both wholesale and retail business.

#### LIVE AND LET LIVE.

Trade was more pleasant and more sociable, there being no such sneaking selfish action. "Live and let live;" that motto had a meaning then and was practiced. A dealer who would offer his goods below the recognized market price, with the object of stealing a customer, would be looked upon as a man with small principle, to say the least. But this has changed, and I am sorry to remark it. From 1861 to 1865 morals and honor became shaky. Most everything has changed since that period. Many pleasant improvements have taken place.

## STORE INTERIOR IN 1850.

Mentally compare the interior of a retail Hardware store 50 years ago with an up to date Hardware store at the present time. We had no gas nor electric light, not even coal oil, depending on lard oil, fish oil and camphene, which was the most dangerous of all artificial lights. There were no such nice fixtures, as shelving, counters, showcases, &c. The goods were all on the shelves, wrapped in paper tied with strings. All kinds of Tools, from a Gimlet to a Hand Saw, from a Razor to a Butcher's Cleaver, were tied up. There were no such nice boxes, and if the package had been opened a half-dozen times or more, there being possibly one article left in the package, you can imagine how things looked. If you compare the appearance of Carriage Bolts now, with every other shelf article you have a fair example of how the goods tied up in paper looked then.

It is impossible to describe the kind and finish of Hardware 50 years ago. Very little was home made, 90 per cent. being imported. Scotch T Hinges, English Sad Irons, blunt pointed Wood Screws, Hook Hinges, Door Locks, &c., all more or less in a poorly finished condition. No nicely polished Garden Tools, Shovels, Spades, and other Implements. Our store rooms were in keeping with the times, small, with low ceilings, poor light and defective show windows. These were all characteristic of the Hardware trade 50 years ago.

## Association Loyalty.

BY TAYLOR FRIER, LOUISIANA, MO.

Having just crossed the threshold of this, the greatest century of history, so fraught with its possibilities and probable achievements toward which we look so expectantly, and as our minds turn backward and we consider the causes which have made possible the great undertakings of all ages and in all avenues of life which have prepared the way for this twentieth century, we are impressed with the fact that the motive power of all successful effort in the religious, philanthropic, educational or business world is fidelity or faithfulness on the part of individuals. Faithfulness is a foundation virtue—it underlies all life and even the existence of society.

In every relation in life is a trust committed, and loyalty to that trust, whether it be a trivial or a greater one, always has and always will be absolutely necessary, if the goal of satisfactory fruition is reached.

## IMPORTANCE OF THE RANK AND FILE.

Great leaders, wise generals and brave captains will always be needed, but all their wise planning and leading and directing would be of no avail were there not the loyal, true, faithful rank and file, on whom they can depend to fulfill their plans and follow their leading. We used to sing in an old song, "Surely the Captain may depend on me." Dependable people, because of fidelity in service and loyalty in duty, how valuable they are in any of life's issues!

There is an old saying that "In union there is strength," but if this be true, there must be a proportionate degree of strength in the unit, and no organization can be effective or accomplish its aim that does not possess in its units or individuals the quality or characteristic that produces the desired effect.

If there is any one characteristic that we Americans, as a nation, take pride in, it is our loyalty—loyalty to country, to flag and the principles it stands for; and there is no accusation that so hurts a true man as to be accused of disloyalty, or of being false and unfaithful. But is it not true that sometimes, because of indifference or ignorance of existing conditions, or even because of our possible inherent selfishness, we appear to lack in our commercial life that element that is so vitally necessary, and that we so admire in other avenues of life—namely, loyalty?

This association stands for certain principles, and we retailers, who constitute its membership, cannot afford, from any cause, to be disloyal or untrue to those principles and its interests.

## LOYALTY COSTS SOMETHING

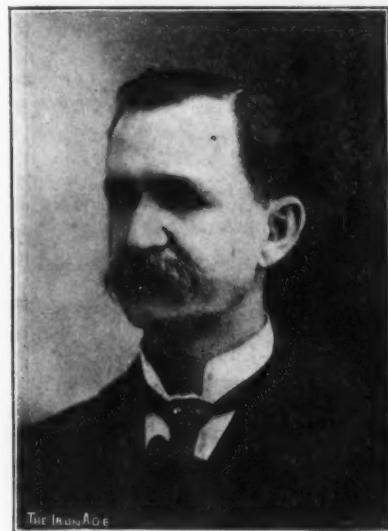
Loyalty, like any other valuable commodity, usually costs something, and association loyalty may mean personal sacrifice of means and ease and time; but are we

going to betray the trust placed upon us and be found wanting because we are afraid of that test of a good soldier or trade-mark of a faithful follower, endurance of hardship, or sacrifice?

My friends, the business world needs men, and the Retail Stove and Hardware Dealers' Association its share of them, just as surely and as keenly as does the Church or State or school. It needs true men and faithful stewards, to whom can be committed vital interests and principles without danger of betrayal. Are any of you buying of a manufacturer or firm who ignore your association or its principles? If so, would it be too much of a test on your loyalty to ask you to buy of those who are in hearty sympathy with you, even though you may pay such a one a little more than you would the former?

## CONSCIOUSNESS OF DUTY WELL DONE.

But even though association loyalty may demand sacrifice, and does demand hearty co-operation and manly service, by upholding the constitution, which declared that "the manufacturers and jobbers who sell



TAYLOR FRIER.

direct to the customer shall not enjoy the patronage of the retailers," does it not also promise abundant reward in the consciousness of duty well done; in the satisfaction that comes to every faithful, loyal spirit who gives his influence and service for the advancement and strengthening of any good cause? And further than this, while we cannot expect to revolutionize business methods in a day, we are certainly, though slowly, gaining ground and are constantly being benefited through association channels; and as we all together stand for right and justice and the establishment of a legitimate dealing in the distribution of Stoves, Hardware, &c., we are bound to accomplish that which we could never have done individually, and which will be of great material benefit to each dealer; and, standing shoulder to shoulder, fighting a common enemy, we will unconsciously, but surely, be brought closer together, and thus, becoming more helpful to one another, we will take our place in the great brotherhood of man. And who can measure the power of the retailer, thus amalgamated for protection and action?

## FIDELITY.

Some one has said, "Fidelity is seven-tenths of business success." How we love the word "success," and how much we covet it! Are we willing to pay the price of that real success that is the effect or result of fidelity or loyalty to righteous principles? If we are, let us get into line and remember that we are living in an age of organization. But the success of the organization depends on the interest and loyalty of the individual member; and let us also remember that this is an age of action, where strenuous lives are the rule, whose keynote is vigor, progress, active service, and whose watchword is to "Act, Act," that each to-morrow finds them further than to-day.



## RESPONSIBILITY OF THE INDIVIDUAL.

And if the Retail Stove and Hardware Dealers' Association of Missouri is to accomplish its aim in existing, and is to grow in members, strength and influence, it will be because each individual member is permeated with the principles enunciated by our State and National associations, and is determined to share in the useful activity of the age and do his full duty, by rallying in every possible way to the help of the association, by buying his goods from those who are known to sell to legitimate dealers only, by attending conventions and thus encouraging our leaders by his presence and influence, and, in fact, playing well his part in this twentieth century movement that is slowly, but surely, working out the salvation of the retail Hardware business.

And then, having done our best, let us continue to do it, and not grow weary, even though the conditions we would like to see are not yet in sight, knowing that every sowing time is followed by a reaping, and that in due season we, too, shall reap if we faint not, but continue faithful and loyal to the end.

## THE CONSOLIDATION OF AXE INTERESTS.

THE movement looking to the consolidation of the interests of the Axe manufacturers is progressing very satisfactorily, with the prospect that the project will be carried out on substantially the lines laid down. The manufacturers who are getting together, and evidently in complete harmony, include the following: American Axe & Tool Company, Kelly Axe Mfg. Company, Mann Edge Tool Company, James H. Mann, Warren Axe & Tool Company, Romer Axe Company and others, thus representing about 95 per cent. of the Axes consumed in the United States. After repeated conferences and thorough discussion an understanding has been reached in regard to the lines on which the consolidation is to be effected, the policy which will be pursued, and the prices which will be made pending the completion of the negotiations for consolidating their interests in one powerful company. Prices, which are somewhat higher than those which have been current, have been announced, and are now being brought to the attention of the trade, as the manufacturers are ready to accept orders. These prices are in a general way referred to as embodying an advance of from 3 to 12 per cent. on factory and jobbers' brands of standard goods, while certain specialties which have been sold without direct profit and which have been objectionable in the market have been given a heavier advance. Efficient provision has been made to secure the maintenance of these new prices by the manufacturers, inasmuch as this is covered in connection with the options given on the various plants. With this guarantee the manufacturers are confident that the market will be free from irregularities. The settled policy of the company is, we are advised, to keep prices at as low a point as is consistent with the profitable manufacture of the goods, and to avoid making prices which will have the effect of awakening the criticism of the trade and at the same time encouraging competition. The slight advance which has been announced is referred to as barely sufficient to cover the increased cost of producing the goods, in view of the higher price of raw material and the increased expenses in other directions. A good deal of attention has been given to correcting abuses which have prevailed in the trade as the result of the excessive competition which has characterized the business for several years. The terms of sale have been changed from four months, with a discount of 3 per cent. for cash in 30 days, to 60 days, with a discount of 2 per cent. for cash in 10 days, to harmonize more with general practice and conditions in the trade. We are advised that the prospects for the early completion of the proposed consolidation, which is the basis of and security for the understanding under which the manufacturers are now working, are very favorable, and those interested express the opinion that the organization will be completed much sooner than was anticipated a short time ago. They are expecting also that the conservative policy of the company will command the general approval of the trade, and in connection with their influence and power contribute largely to their success.

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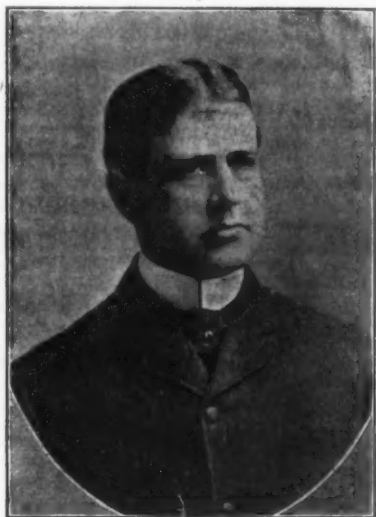
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## Indiana Retail Hardware Dealers' Association.

**T**HE members of the Indiana Retail Hardware Dealers' Association are now assembled at their third annual convention, the scene of the deliberations being the Denison Hotel, Indianapolis. The meeting opens on the afternoon of the 19th inst., the closing session being held on Thursday afternoon, 20th. The convention promises to be large and successful. Many new members are joining, bringing the membership up to about 300. Through the medium of advance copies we are permitted in this issue to lay before the trade several of the papers and addresses which will be features of the convention.

### President W. P. Lewis' Address.

Wisdom has recently been defined as the ability to see large things large and small things small. There are men in the Hardware business in Indiana who, in the light of this definition, have wisdom. They see large things large and small things small; they are members of this State organization. I am zealous for our State association. It is already large, strong, active and intelligent. It has been forceful in its labors on the national field, but there are still many Hardwaremen who have not been aroused. When these men awaken and enroll their names, as they surely will, and take their place beside the loyal men who have given character to



W. P. LEWIS.

this movement, Indiana, the geographical center of this Union, will continue to stand, as she now stands, in the front rank, and will exert an influence that will sweep over the snow lapped Rockies and be felt to the Western sea.

### INFLUENCE OF ASSOCIATION WORK.

Few men, even in our own membership, comprehend the advancement we have made and the power of our association, State and National. These two are one and inseparable, and we shall so view them.

When John was in prison he sent two messengers to the great Nazarene, bearing this inquiry, "Art thou He that should come, or look we for another?" Christ, in His answer, did not refer them to the prophets and say, "It should be clear to you that I am the logical sequence of all that was foretold should come to pass," but He tersely said: "Go tell John what you see and hear—namely, the blind receive their sight, the lame walk, the lepers are cleansed, and the deaf hear," &c., and thereby John could form his own conclusions. It has been asked, directly and by inference, if the National Retail Hardware Association is the Savior of the Hardware business? Go and tell such seekers after truth that in the national secretary's office there are on file letters from many manufacturers, stating over their own signatures that they will not sell to the con-

sumer direct, or market their goods save through the regular Hardware dealers. Tell them that the following is taken from a circular recently issued by one of the largest Hardware jobbers in the country: "The large increase and satisfactory condition of our wholesale business, both in the city and in the country, and the strong sentiment that prevails among retail Hardware dealers and also the manufacturers that it is not in harmony with the spirit of the times for jobbers to come in competition with their own customers through a retail department, led our Board of Directors to unanimously vote against opening a retail department in our new building when it is completed. As the Hardware trade will, no doubt, be interested in our decision, I take this occasion to promptly advise you that this question is now settled. For some time past we have placed prominently at the front door of the office of our wholesale business signs reading: 'No goods sold at retail.'"

### THE NATIONAL ORGANIZATION AND ITS COST.

Tell them that there are many other equally important facts in the possession of the National organization, which have not been and cannot be secured by any State organization single handed; tell them that there is no other name given whereby the best, the cleanest, the most dignified branch of retail merchandising may be saved. But it has been said that it costs too much money to belong to the State and National associations, and that we should beg contributions from the manufacturers and jobbers. Indiana paid approximately \$1000 last year for the maintenance of State and National work. The capitalization of the members of this association in good standing is \$4,923,500. This counts no new members, and these figures are from an authoritative mercantile agency. In round numbers, we represent to-day easily \$5,000,000. On this capitalization we pay, all told, for State and National support, one-fiftieth of 1 per cent. Again estimating \$5,000,000 to be the aggregate annual business of the membership of our State association, and estimating 10 per cent. to be the cost of doing this business, it is plain that we pay 500 times more for the cost of doing business than we are called upon to pay for the support of an organization, the object of which and the practical effect of which is to defend, protect and make profitable the business we do.

I desire to go on record as being duly thankful that the men who think association work too expensive and that we should solicit outside aid are not gentlemen from Indiana.

Now in the light of these statements, it seems, first, that association work is potential and visibly effective, and also that it is conducted at an expense so small that it is difficult to take seriously a man who complains of the cost. To those men who have hesitated, who have feared lest we accomplish nothing, who feared it would cost too much, to these we say, hesitate no longer, fellow traveler, and remember that he who hesitates "needs a tracer." Association work is continuously a labor of education, manufacturers, jobbers and retailers alike being students in a great class of commercial equity.

### THREE FUNDAMENTALS.

To develop strong and enduring organization there must be three fundamentals: 1, The principles for which we contend must be unassailable; 2, the leaders must be trained and diplomatic; 3, the membership must be energetic and co-operative. Concerning the first of these three, I am not a prophet and claim no prophetic ancestry, but I hazard the prediction that the time is not far distant when the principles for which we now contend so vigorously will be recognized as axioms, will be considered and admitted as matters of the plainest equity, and this will be brought about, not so much by the influence of trained leaders as by the co-operation of the membership. I am a believer in the greatness of the rank and file, particularly such rank and file as constitutes the membership of this body, every man being one accustomed to financial responsibility and to making decisions involving gain or loss.



## FACING THE FUTURE.

Another year has gone, another page of history is written, and again we stand together to face the future. I am proud of Indiana, I am proud of our capital city, I am glad to be here, I love the touch of a friendly hand and the light of a kindly eye, and I would rather listen to the remarkable trade experiences of my friend, the member from South Bend, than to have pie for breakfast for a month. And, speaking of secretaries, if there is a better one than ours anywhere in this broad land, his name is not in my address book. Mr. Corey has done more thinking, more writing, more traveling and more work than is common to secretaries; he has been faithful to the interests of this association, and he has been much more, he has been diplomatic and intelligent.

Encouragement is in the air, Arkansas, Pennsylvania and Wisconsin have joined the National and others will follow soon. We have passed the period of uncertainty, the period of development is under way, the power and destiny of this movement is in our own hands, and when every man shall do his duty our progress will be an unchallenged march of peace.

**Address of T. James Fernley,**  
SECRETARY-TREASURER NATIONAL HARDWARE  
ASSOCIATION.

It gives me a great deal of pleasure to meet with you to-day as an official of the National Hardware Association of the United States, delegated by an organization composed of 185 of the leading jobbing



T. JAMES FERNLEY.

houses of the country, employing about 2500 salesmen, and doing a business of probably \$160,000,000 per annum, which business is done with the retail Hardwaremen of the United States—many of whom are now members of the State retail Hardware organizations, and through these affiliations, members of that most vigorous body, the National Retail Hardware Dealers' Association of the United States.

I bring to you the best wishes of our organization, and the sincere hope that the retail Hardwaremen of the country will all realize the necessity of connecting themselves with organizations, through which means, it is admitted on all sides, benefits can be obtained and objects accomplished which could not be obtained through individual effort.

## HARDWAREMEN'S QUALIFICATIONS.

You gentlemen are engaged in no mean vocation. I hold that the Hardwareman of the twentieth century is, and must be, a man of more than ordinary intelligence, and must possess knowledge of the business which can only be acquired through a course of instruction which requires years of labor. Theologians, lawyers and physicians are prone to think that they are the only ones who require an education to successfully prepare themselves for the duties and responsibilities of life. In my opinion the Hardware merchant should be educated from boyhood in everything that pertains to the conduct of the business. Indeed, I am not sure but that

the law of the various States should insist upon an examination as to the qualification to conduct any given line of business before permitting any one to embark in it. We know that the theologian must pass an examination before being permitted to enter upon his profession. The lawyer must be examined by a board of men well versed in the law before he is recognized as a practitioner before the courts. The doctor must present his diploma certifying that he thoroughly understands the human anatomy and the diseases which may attack man, and how to prescribe remedies for treating the same.

## THE QUACK IN COMMERCE.

These safeguards are provided for the protection of the citizen, and the State does not recognize "quacks." We hold that the "quack" in commerce is quite as dangerous to mankind as the "quack" in medicine. The man who opens a Hardware store without a knowledge of the business, and without such qualifications as will fit him to conduct it, is a "quack"—a "commercial quack." He invests what money he has, or can borrow—and "quacks" are much more apt to invest other people's money than their own. He hires a store, puts in a stock of goods and then, without knowing anything of their value, makes prices on his stock regardless of the cost and regardless of the expenses of marketing the same. The result is—as has been proven thousands of times—the sheriff, in course of time, takes possession; not, however, before this "quack" in business has seriously hampered the educated men who are competent to carry on a business, and who might have been doing so for many, many years. We have known of cases where "quacks" of this nature have driven legitimate men to the wall, and, indeed, to death. This being the case, why is it not right and proper that some safeguard should be provided for the merchant?

## INCOMPETENT SOURCES OF SUPPLY.

I call this to your attention because the retail Hardware business to-day is being attacked on all sides by those who are not competent to intelligently supply the wants of the buying public.

You gentlemen would not be permitted to conduct a drug store, and yet the druggist can, with impunity, enter the Hardware business. To-day we find the dry goods dealers putting into their stocks a line of Hardware and selling Pocket Knives on the same margin of profit as muslin, and Tools on the same margin of profit as spool cotton.

We find that concerns who do not display their goods to their customers, but who present a poorly printed wood cut of the same and offer to fill the order by express, provided the money is sent in advance, are putting themselves in competition with the intelligent Hardware dealer who is carrying a stock of goods, and is in a position to make immediate delivery, and in the event of the customer being worthy of credit to thus favor him.

I am not a pessimist; much prefer to view things from the sunny side of the street, but this twentieth century condition is an unfavorable one, and must be met if the Hardware trade of the country is to flow in the proper channel.

## THE NATURAL CHANNEL.

We hold in our National Hardware Association that the natural channel through which commerce in the Hardware line should pass is from the manufacturer to the jobber, and from the jobber to the retailer and from the retailer to the consumer; and that whenever any counter current crosses this legitimate one trouble ensues. We do not hesitate to state that we believe the jobber is in a much better position to serve the retailer than any manufacturer. We further state (and are in a position to prove) that the distribution of goods through the jobber is by far the most economical method. Indeed, I think you gentlemen will admit that it would hardly be possible to conduct a retail Hardware business to-day but for the fact that within a short distance, not over a few hours' time at the most, there is a central depot of supply upon which you can call for the wants of your customers on very short notice.

## THE MOST ECONOMICAL MEDIUM.

I made the statement that the jobber was the most economical medium of distribution, and this is susceptible of easy proof. The jobber, by closely watching the markets, is in a position to take advantage of trade conditions as they arise. Manufacturers, who for various reasons desire to move a large quantity of goods, quickly communicate by wire, letter, or in person, with those who are in a position to use a quantity of goods. Purchases are made, and the corps of traveling salesmen constantly employed by jobbing houses are advised at once of the favorable transaction, and the retailers are the beneficiaries. Unfortunately, this business is done by the jobbers at almost the flat cost for the service rendered. It is a fact that there are not as many jobbing houses in the country to-day as ten years ago. This is because there has been such keen competition between those in the field at that period of time, and the retailer has been enabled to buy goods so near to the cost of the jobber that the latter has not been able to accumulate any large amount of money, and hence the business has not been attractive enough to induce outsiders to embark into it, and those who have not been extremely keen in their business methods have been forced to retire, leaving in the field only such as have put into their business the greatest degree of ability.

The retail merchant to-day is suffering much from the competition of those who are occupying the same relation to him that the "quack" doctor does to the legitimate practitioner, and if I am correctly informed, it is to alleviate this condition that the retailers of the country are organizing into these associations. This action on your part is commendable. I am only surprised to note that such a comparatively few number of retailers up to the present time have realized the importance of supporting both morally and financially these associations.

## ATTITUDE OF THE NATIONAL ASSOCIATION.

The good feeling which the National Hardware Association of the United States has displayed toward the retail Hardware organizations is, I am happy to say, reciprocated by the members of these organizations.

While preparing this address the Proceedings of the Illinois Retail Hardware Dealers' Association have reached me, and I assure you that it afforded me much pleasure to read the address of H. C. Cormick, the president of that association; and particularly did I note with pleasure this paragraph in his annual address:

In view of the fact that the members of the National Hardware Association are our friends, I believe it would be to the interest of this association if each of our members would ascertain if the jobber of whom he buys is affiliated with the National Hardware Association.

I also read with pleasure the following remarks of this gentleman:

The National Hardware Association have proven themselves to be friends of the retailer. Conferences between this body and the National Association of Retail Hardware Dealers have been along this line. I regret that many of the Hardware jobbers in Illinois do not belong to the National Hardware Association. Our duty in these premises is to discontinue indiscriminate patronage of jobbers.

The members of the National Hardware Association do not ask for any patronage at your hands because of the fact that they pursue a policy which they consider is only honorable and just. It is true that a few concerns in the United States in the jobbing Hardware business are not connected with our association, for reasons best known to themselves; and while these concerns would be admitted to our association if they applied, yet we feel that their membership is not essential.

## NO ATTEMPT TO CONTROL PRICES.

At first it was thought by some outside our organization that possibly the National Hardware Association of the United States would attempt to control prices, or to make price agreements between their members. I want to assure you, here and now, that this has never been attempted, and in all probability never will be. The object of our association is to create more cordial feeling between the manufacturers, retailers and job-

bers, and this object could certainly not be brought about through a system of price agreements. Every member of our association is privileged to conduct his business in such a manner as he may see fit, but we endeavor to carry out the motto, first announced by William P. Supplee, who for the first four years of its existence was president of our association—namely, "A High Standard of Business Methods."

The National Hardware Association of the United States, I am proud to say, commends your action, and has placed on record a resolution, which I take pleasure in now reading to you:

*Whereas*, The National Hardware Association, in convention assembled, have discussed the evil effects of the competition of the catalogue houses with the legitimate retail trade of the country, realizing as we do that this system of merchandising is inimical to the interest of the manufacturer, jobber and retailer, and in our judgment, when the entire system of distribution of goods through this medium is taken into consideration, it is not even in the interest of the consumer that such institutions should be sustained; therefore

*Resolved*, That we reaffirm the position this association has taken on this question ever since its inauguration seven years ago, and we instruct the secretary of the association to use his best endeavors on all occasions to the end that manufacturers may be induced to refrain from selling this class of houses; and

*Further*, We recommend that members of our association instruct their respective buyers to obtain copies of these catalogues, having same within easy reach, so that when they are solicited for orders by manufacturers they will be in a position to quickly ascertain whether the goods offered can be sold to the retail merchant, and by him sold to the consumer, at the prices quoted in the catalogues, with a proper profit to both the jobber and the retailer.

*Resolved further*, That it is our opinion that members of our association cannot consistently furnish goods to catalogue houses, and we hope that they will see it to their interest to refrain from so doing.

*Resolved further*, That we request the president of our association to appoint a committee to confer with the National Hardware Dealers' Association on this subject, or any other matter relating to our mutual interests, when such request may reach our association from the officials of the National Retail Hardware Dealers' Association.

I would further call your attention to the fact that before the organization of the first retail Hardware dealers' association, the National Hardware Association of the United States was doing its utmost to prevent the inroads which were being made upon the retail Hardware business, by what we consider illegitimate competition, and while we have to a large extent been successful, yet, notwithstanding our efforts, these "quacks" in commerce have continued to grow, and the members of this association, as well as the members of the one I represent, have been the sufferers.

## UP TO THE MANUFACTURER.

The remedy lies with the manufacturer. As long as he will recognize these people as entitled to consideration, they will continue to thrive. The jobber is compelled to carry such goods as his customers demand. However, when the manufacturer learns that he is losing caste with the twenty odd thousand retailers of the country, because he is selling 100 or 150 department stores and catalogue houses, he will be very apt to change his tactics.

We do not recommend a boycott; this is un-American. But we do advise the retail merchants to present a respectful protest to every manufacturer whose goods are being handled by this class of operators, and we state advisedly that we do not believe that any manufacturer would dare to ignore a request for protection which would reach him from such a large number of retailers as are now represented in the various retail Hardware associations of the country.

## POWER OF RETAIL ASSOCIATIONS.

The power which you gentlemen possess is a great one. This organization and similar ones can be worth hundreds, and perhaps thousands, of dollars per annum to each individual member.

We are very much pleased to note the enthusiasm which seems to be attending all the meetings of retail associations during the past year. You have enjoyed individually a good share of prosperity, and there is every



indication that this pleasing era will be lengthened. Eight months ago it was thought that possibly a much lower range of prices would prevail with the beginning of the year 1902. Such, however, is not the case. Leading manufacturers of many lines of goods are declining orders, and this in itself would indicate that your business will be good during this year. You deserve to prosper.

#### VIS INERTIAE.

As previously stated, you are conducting a business which requires knowledge, capital and experience. There is a force in life which in Latin is known as *vis inertiae*, but this force is an unknown one to the Hardwareman.

The farmer sows his seed and waits for the harvest; the lawyer pleads his case and waits a decision; the department store publishes a misleading advertisement and waits the arrival of the unsuspecting public; the catalogue house send out a cheap paper book and waits the shekels of the unsuspecting farmer or townsman, who is disloyal enough to his own neighbors, from whom he expects to derive his support, to send his money to a distant city and trust to luck to get what he wants a few weeks after he needs it; the minister of the Gospel expounds the Word and waits until he gets to Heaven for his reward. All these parties have full knowledge of this force of *vis inertiae*. The retail Hardwareman has not. He opens his store early in order to supply the demands of the mechanic on his road to the shop. He climbs the ladder for the odd size Gimlet or Cupboard Catch that he has placed on the shelf many months before, in order to meet the possible demand which has just been brought to his attention by the waiting customer. He goes to his cellar for an odd size Sash Weight which may not be called for again till the rope has broken and the Weight lost between the weather board and the plaster. He shows the Clothes Wringer to the young woman about to undertake the contract of washing clothes for some young man who has been making love to her during the winter evening hours. He eats a hurried luncheon, he interviews salesmen, and does his utmost to buy at the lowest market prices. He racks his brain to make the salesman believe that his competitor is underselling him.

With the setting of the sun his work is not done. The carpenter comes in after supper to select the Hardware for the building which is to be completed the next day, and so, day after day, this is the routine of his life. Of *vis inertiae* he knows nothing; therefore his reward should be great, and I want to say that the necessity for this is recognized to a greater extent by none than those that I have the honor to represent. If you find at any time that the members of our association are engaged in any practices which seem to be antagonistic to your interests, I ask that you communicate with the secretary of your association, and he with me, or, if you prefer, that you communicate with me direct, and I shall consider it a part of my duty to urge such offending member of our association to discontinue any method of business which is objectionable to you.

The members of the National Hardware Association of the United States come to you with the offer of the power of their organization, to assist you in placing your business upon a plane which will make you the most happy and prosperous of merchants.

#### Hardware Store Arrangement.

BY J. D. WARREN, CHICAGO, ILL.

The arrangement of goods in such way as to appeal to the interested and disinterested person is as important to the Hardware merchant's success as in any other line of merchandise. It is the captivating form of arrangement that produces sales, to a certain degree, and not the amount of stock carried. A person's interest in buying Hardware goods can be aroused as much, or even more than any other line. Why? Because there is not a person but needs some certain article in your stock nearly every time he enters your store—provided you do not keep too many chairs and benches around.

#### SECURING ATTENTION.

You ought to arrange your goods to capture his attention with as much interest as the jeweler studies,

with dainty trays and various other forms, to charm and beguile the onlooker, until the fascination to possess the article leads him to purchase something he may not actually need, but will be happy in the thought of its possession.

You certainly should obtain equally as favorable results in the many profitable lines of goods—which may not be considered necessary, yet useful—but, of themselves, would show a new profit that your books have heretofore failed to show by the sale of standard goods alone.

Why should you be second to your next door neighbor, whose main sales are through the attractiveness of display? You have simply to arouse the interest of the would be buyer, and his surplus change will go as quickly into your cash drawer as that of any other merchant.

#### THE HARDWAREMAN'S STANDING.

The majority of Hardwaremen do not realize, or appreciate, the high standing their class of merchandise



J. D. WARREN.

gives them in the community in which they dwell. You are devoting your life work to a class of goods which is second to none in the employment of the best minds in their artistic design and manufacture. The one great reinforcing energy the Hardware merchant needs is a correct and true appreciation of the high standard that he represents and is his in the business world today.

What industry has more capital, or greater minds at its head than that of iron and steel? You are a part of the whole, and as part equally serviceable, and should be equally proud of the classified merchandise to which you belong.

When the Hardware merchant becomes imbued with that thought every day, then the arrangement of his store will become a pleasure and a delight, of which he little dreams; and one's success must come mainly through an occupation in which his whole soul and energies are aroused, and nothing bespeaks it in stronger words to the public than the appearance and conditions presented by that which represents his occupation. By it, and through it, they judge him. No newspaper or circular could do as much good advertising as the appearance of one's own store when kept in a way to excel that of others.

#### THE RIGHT ARRANGEMENT OF STOCK.

will be in the same ratio as his pride and interest go out to the goods he is marketing; and the realization that it is the best avenue through which profit and success may be won. The transformation from the unkept to the systematic and attractive begets a pride that leads him, as never before, to interest every caller through the fascination that the improved arrangement of his stock is to both merchant and employees, as

well as the visitors. The new arrangement grows much more interesting as he sees its advantages, not only increasing his profits, but delighting his patrons and lessening the burdens and perplexities of each day's work.

#### TO ARRANGE STOCK ATTRACTIVELY

appears to many beyond their skill, through want of experience; but its undertaking is like many games and new amusements of the day, proving far more interesting than had been thought possible.

One of the leading Hardware merchants in the United States has remarked that "It matters not how low we may buy our goods, how great a stock, or how fine a store we may have; if we have not the means of selling, it amounts to but little."

This brings to mind, if I may be permitted to digress, a question that was introduced by the president of the National Wholesale Hardware Association at its annual meeting held in Milwaukee in 1898, which was as follows:

"1. Are we not giving more attention to buying goods than we are to selling them?"

"2. Are we not apt to think that the first is of greater importance than the latter?"

Would it not be well for every Hardware merchant to put these points to a test for a given period, and learn if it does not pay better than too much time devoted to the study of buying?

Let me suggest this regarding store arrangement, which will require merely an investment of spare time and but little money—that every Hardware merchant during the first two weeks of March enter into a hearty co-operation with all the employees in his establishment to devote the entire spare time during that period in straightening out and rearranging their stock of goods throughout the store, including equally active work of the office force in classifying and assorting all printed matter.

#### HARDWARE COLORS

After this is done, make use of \$5 or \$10 worth of paint in brightening up your store, which then cannot be otherwise than pleasing to all its occupants and cheerful to all visitors.

In doing this, why not all join in adopting a distinctive Hardware color of finish, of aluminum for one part and gold bronze for the other. These are rich and appropriate colors for finish, both inside and outside. What better or more tasteful form of designation could be adopted? Then have it known throughout the community and county that these colors are distinctively Hardware colors, and any store thus painted would be recognized when seen at a distance as a Hardware store.

#### Up to Date Hardware Advertising.

BY H. P. TOWNLEY, TERRE HAUTE, IND.

The object of advertising is to give publicity. It has been called the salesman's ally. It brings people to the store. It cannot make them buy, still it puts them into a receptive mood for buying, and thus makes the salesman's work easier.

How best to accomplish this in the up to date Hardware business is the topic for our discussion to-day. We take it the majority of the members of our association are in business in the average small town, whose field of operation is confined to the town and the county in which they reside, and where one or two daily and weekly newspapers are published.

In our high school days we were given an outline or skeleton for writing a composition on any subject, consisting of five words—Who, what, where, when and how. We will follow this outline in the treatment of our subject. While we have been writing ads. for over 20 years, yet we do not presume to know it all, but rather describe our own methods, trusting some ideas may be worth carrying home.

#### WHO.

In these modern times advertising is a department of the business, just as much as buying, selling, collecting or bookkeeping. It should be left to the charge of one man. He should have the instincts of a sales-

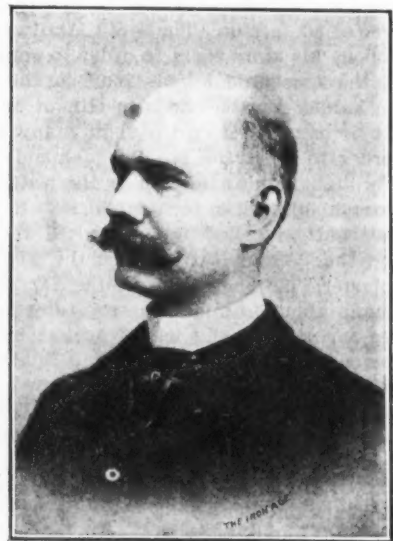
man as well as the pen of the ready writer, and be willing to give time and thought to this work, for a well worded, attractive ad. cannot be dashed off in a few seconds while waiting on a customer or doing other work.

#### THE AMOUNT OF MONEY TO SPEND

must vary with circumstances. Ordinarily 1 to 2 per cent of the gross sales is used, though some firms go as high as 3 to 5 per cent. A new location, new lines of goods or lively competition may require larger expense some years than will be needed in others. The amount should be determined at the beginning of each year when the general plan of the advertising campaign is outlined, allotting definite amounts for newspaper, circulars, board signs, &c.

#### WHAT.

Of course the firm's name and location should always be prominent. In a general way the goods in our stores are divided into two classes, general Hardware, including House Furnishing Goods, and Builders' Hardware. The first sells constantly (and generally to the home); the latter sells only during the building season, so we would say advertise the general Hardware and House



H. P. TOWNLEY.

Furnishing Goods the year round as specialties, choosing a different article or line of goods each day when in season, and making it prominent in your community by use of cuts and clear and well written descriptive matter.

In Builders' Hardware the price you can make seems to be your best ad., and sending your salesman to do personal work the most effective way of making sales.

#### WHERE.

Advertising seed is planted in innumerable places, such as newspapers, hand bills, circulars, billboards, show windows, farm fences and barns, programmes, hotel registers, street cars, gift schemes, advertising novelties, &c., but whether there be fruit from all of these is doubtful. Indeed, we think as much money can be wasted by injudicious advertising as in any other department of the business.

#### NEWSPAPER IS THE CHEAPEST ADVERTISING.

Our custom has been to spend nine-tenths of our money with the newspapers and one-tenth in circulars and show windows, entirely ignoring the balance. In the long run the newspaper is the cheapest place to let the people know what you have to sell. The subscriber to the newspaper is our substantial citizen and buyer. We contract each year for 5-inch double-column display with one morning, one or two evening and one weekly paper, and spend most of our energy here. This is the medium which goes into the homes and from which we know we secure the best results.

Hand bills and circulars smack too much of auctions and Cheap John houses, and bring little fruit to the dig-



nified merchant. Besides, when they are distributed right they are expensive. Our neighbor—a clothing dealer—printed some thousands of circulars announcing a midwinter sale of heavy suits and overcoats. He hired young men who were highly recommended to distribute them. Next morning a friend presented him with an armful of these circulars that had been left on his veranda.

We do not consider billboards and fence signs effective, for this kind of advertising has been largely overdone.

#### ADVERTISING NOVELTIES.

In the line of advertising novelties we have used a great many yardsticks, but little else except such cards, memorandum books, match safes, rulers, &c., as have been furnished by the manufacturers from whom we purchase goods.

A gift scheme in which you are supposed to give something for nothing will always attract some customers. This should be conducted on a large and liberal scale, if at all, but we advise caution in its use.

The show window is not an expensive method of advertising, and is a very profitable one. It backs up the newspaper ads. and appeals also to such people as do not read the newspapers, who may be passing the store. We dress our windows once a week with seasonable goods, making the display as attractive as possible, having neat tickets with prices attached to the articles. On special occasions, as Christmas, Easter and Decoration Day, it pays to go to extra labor and expense to make a striking window. Use plenty of electric light and bright colored cloth for background.

#### WHEN.

Keeping everlastingly at it is our rule. Through the dull as well as the busy season.

#### HOW.

One-half of our desk is given up to advertising Tools. We have accumulated several hundred cuts and numerous memorandums and books, which are kept in drawers properly classified. It is our custom to make (for future use) clippings of any suitable ads. found in the newspapers, trade papers, magazines and circulars. These clippings are deposited in a large portfolio, the pockets of which are labeled Hardware, Steel Ranges, Bicycles, Heating Stoves, Housefurnishing Goods, Circulars, Show Window, &c. This portfolio is a reservoir of ideas and suggestions, from which we can draw as the occasion demands.

Having decided on the article to be advertised we turn to our portfolio, and with little effort can block out a new ad. every day. We give this to our morning paper and instruct the evening papers to copy it, thus saving the labor of preparing a second and third copy for them.

#### ADVERTISE ONE ARTICLE.

We advertise one special article, or line of goods, at a time and always use a cut, allowing about one-fourth of the space for the cut. Another fourth is allowed for a catchy headline in large, bold type, and the balance is taken up with a detailed description of the article in small type, followed by the firm name and location in bold type. In the description we try to keep the customer in our mind's eye, and write just as we would talk to him if he were in the store, and we, as salesmen, were intent on making a sale. We advertise only the goods in which there is the best profit, telling plainly, briefly, sincerely and honestly the points of excellence, the superior qualities, the guarantee and very often the price. All goods advertised strongly are expected to carry stronger profits. Quaker oats sells for 25 per cent. and Royal baking powder for 50 per cent. higher than their closest competitors, yet they have held their places for years against all comers.

We never mention other makes of goods nor speak of a competitor to run down his wares. Our aim is to catch the eye of the reader by the use of the cut and the catchy headline, and to hold his attention by our descriptive matter, as we know these are the surest steps to reach his pocketbook.

The habit of keeping clippings systematically in a portfolio makes the labor of writing new and fresh ads. daily very simple and easy.

A number of ad. books containing reproductions of ads. in Hardware and kindred lines have been published and are very helpful. Several ad. bureaus offer to furnish weekly ads. with appropriate cuts. These are quite expensive and have the ear marks of the professional ad. writer. Such ads. are written in the seventeenth story of some office building in New York. They are general in character and never have the directness, force and pulling power that can be given to the ones that come from your own office.

#### SOME POINTS TO REMEMBER.

In closing this brief paper we would say:

1. Be systematic.
2. Have an ad. every day.
3. Make ads. short.
4. Use cuts all you can.
5. Advertise one thing only at a time.
6. A border or type of your own gives individuality.
7. A phrase repeated continually is effective. Always remember the silent voice of persistent, dignified, truthful advertising rings inside the pocketbook.

### CORRESPONDENCE.

The following letter explains itself:

NEW YORK, February 19, 1902.

To the Editor of The Iron Age:

Our attention has been called to the following letter which has been circulated freely throughout the trade by Woodward, Wight & Co. of New Orleans, and for fear of a wrong construction of its contents we will esteem it a favor if you will publish same with the statement we make below:

Commencing on this date, February 11, 1902, we beg to say that Oliver Bros. of New York City have resigned as purchasing agents for us; and, of course, have no desire or authority to use our name in any way, shape or form in the future.

On receipt of this, kindly send us a statement in detail of our account with your good selves up to date, and also a memorandum of any unfilled orders you have, either direct from us or from Oliver Bros.

Your kind attention will greatly oblige,

Yours very truly,  
WOODWARD, WIGHT & CO., LIMITED,  
IRA E. WIGHT, treasurer.

We have severed our connection with Woodward, Wight & Co. for honorable business reasons, and positively have no desire or need to use their names in any manner, shape, or form.

From our standpoint, neither of the above statements should be construed as unfriendly in any sense.

With kind regards, we beg to remain,

Very truly yours,

OLIVER BROS.

### STANLEY WORKS' NEW CATALOGUE.

THE STANLEY WORKS, New Britain, Conn., and 79 Chambers street, New York, have just issued a fine new catalogue of 179 pages, each 9¼ x 6½ inches, bound in stiff covers. It illustrates and describes their complete line of Wrought Bronze and Steel Ball Bearing Butts, Wrought Steel Butts, Hinges, Door Bolts, Shelf Brackets, Blind Trimmings, Shutter Bars, Ornamental Hinges, Trunk Hardware, Corner Irons, Washers, Screws, Hasps and Staples, Folding Camp Stools and various other goods of standard character made by this company. The Ball Bearing Steel Washer has been applied to a number of Butts more moderately priced than formerly and a comprehensive telegraph code has been added.

### INDIANA EDGE TOOL COMPANY.

ARTHUR G. SHERMAN, 14 Warren street, New York, manager of the sales department of the Indiana Edge Tool Company, Gas City, Ind., is sending out to the trade a price-list showing a very complete line of Axes. This company, being in the natural gas region of Indiana, are well located for the manufacture of this line of goods, and state that they are in no way connected with the proposed consolidation of Axe interests. Mr. Sherman solicits inquiries from the trade as to prices.

# Illinois Retail Hardware Dealers' Association.

THE conventions of the Illinois Association advance in interest and importance from year to year. The 1902 meeting at Decatur was by far the best of the series not only in the number in attendance, but also in the enthusiasm shown by the individual members. Any work assigned was performed with zeal. Few of the officers were absent when the roll was called at the opening session on Wednesday morning, February 12. The list of officers for the year ending with this meeting is as follows: President, H. G. Cormick, Centralia; vice-president, Wm. Bittel, Peoria; secretary, G. R. Lott, Chicago; treasurer, F. F. Porter, Chicago. Executive Committee: H. G. Cormick, Centralia; Wm. Bittel, Peoria; G. R. Lott, Chicago; F. F. Porter, Chicago; Z. T. Miller, Bloomington; W. T. Gormley, Chicago; H. N. Murphy, Galesburg; Chas. Mauer, East St. Louis; Chas. H. Williams, Streator; Lawrence Babst, Kankakee.

## WEDNESDAY MORNING SESSION.

The convention hall was crowded when the assemblage was called to order. M. Fahey, one of Decatur's enterprising dealers, welcomed the association in a few appropriate remarks and introduced Mayor C. F. Shilling, who gave the visitors a warm greeting, saying that



ASSOCIATION BADGE.

all doors had been thrown open in anticipation of their coming, calling attention to the gift of the keys of the city, as shown on the badges provided by the local committee. In behalf of the association, D. McLaughlin of Chicago thanked the Mayor, the local organizations, and the citizens for their warm reception and expressed the pleasure of the members in being privileged to meet in a city so evidently overflowing with hospitality.

President H. G. Cormick announced that the convention was ready to proceed with the regular order of business. Secretary G. R. Lott called the roll of members. The following firms were represented by members in actual attendance:

### Members Present.

#### AUGUSTA.

Wm. Golm.  
BLOOMINGTON.  
Z. T. Miller.  
G. H. Reed & Bros.  
H. S. McCurdy.  
M. L. Popple.  
BARRINGTON.  
L. F. Schroeder.  
CENTRALIA.  
H. G. Cormick.  
CHANDLERVILLE.  
John C. Morse.

#### CHICAGO.

H. O. McClure & Co.  
Bullard & Gormley Company.  
J. F. Borchardt.  
J. H. Bixler.  
W. B. Costello.  
Chas. Dalstrom.  
W. H. Decker & Co.  
Martin Engelhart.  
Hans Fehr.  
G. E. Gnadt.  
Aug. Greenheld.  
Geier & Peppier.

Herzog & Spindler.  
Fred. Kurtz.  
L. A. Krueger.  
W. J. Krueger.  
G. R. Lott.  
D. McLaughlin.  
Sigfried Melohn.  
A. Pophal.  
F. F. Porter.  
Paul & Krogh.  
L. Rosenberg.  
John Ruedel.  
H. E. Robmann.  
J. L. Smith.  
P. H. Schuster.  
G. E. Gundling.  
John Black.  
O. D. & M. W. Powers.  
J. & M. Butwies.  
EAST ST. LOUIS.  
Chas. Mauer.  
Schaub Hardware & Iron Company.  
Barbour Hardware Company.  
F. B. Jordan.  
ELGIN.  
Nish Bros.  
GALESBURG.  
G. B. Churchill Company.  
HAVANA.  
G. B. Holsgrafe.  
KEWANEE.  
Kennish & Cable.  
KANKAKEE.  
Lawrence Babst.  
Norris & Frith.  
LYONS.  
Fred. Waller.  
MACOMB.  
Campbell Bros.  
Whitman & Price.  
MOMENCE.  
D. E. Styles.  
NEW HOLLAND.  
Strumpf & Chestnut.  
OTTAWA.  
Paundstone & Refior Hardware Company.  
PEORIA.  
Wm. Bittel.  
Balzer & Reeves.  
Charles Johnson.  
Hunter & Strehle.  
F. Meyer & Bros.  
A. B. Weers.  
PEKIN.  
Pekin Hardware Company.

PAXTON.  
Paxton Hardware Company.  
Kemp Bros. & Hopkins.  
POLO.  
Fay Bros.  
STREATOR.  
Powers & Williams.  
SANDOVAL.  
Bellamy & Co.  
THOMASBOROUGH.  
Fiedler Bros.  
ROCKFORD.  
McGuire Bros.  
J. L. Clark Hardware Company.  
Frank D. McKenney.  
FAIRFIELD.  
E. A. Martin.  
DECATUR.  
Morehouse & Wells Company.  
Michael Fahey.  
C. M. Barnett.  
B. M. Dennis.  
J. P. Eckels & Co.  
W. L. Ferguson.  
W. F. Ferguson.  
SALEM.  
J. H. Vawter.  
NEOGA.  
Walter Casstevens.  
VANDALIA.  
Robert G. Scheurer.  
Huston & Son.  
TUSCOLA.  
Bagby Bros.  
LINCOLN.  
F. W. Keist.  
URBANA.  
H. M. Shuck & Co.  
LATHAM.  
Chas. Pritchett.  
DANVILLE.  
E. C. Abdill's Sons.  
BAYLIS.  
C. E. Bowman.  
NIANTIC.  
Britchett Bros.  
JACKSONVILLE.  
Brady Bros. Hardware Company.  
SPRINGFIELD.  
Gumbrook & Son.  
NOKOMIS.  
Spannagel Hardware & Furniture Company.

### Committees.

The secretary read the following list of appointments on committees:

LOCATION OF NEXT PLACE OF MEETING: J. M. Hunter, Peoria; Leon Nish, Elgin; W. J. Krueger, Chicago; L. H. Clark, Rockford; F. W. Slecke, Freeport; H. N. Murphy, Galesburg; Z. T. Miller, Bloomington; C. M. Hurst, Decatur.  
FINANCE AND AUDITING: Leo Krueger, Chicago; F. B. McKinney, Rockford; D. Refior, Ottawa.  
RESOLUTIONS: L. Babst, Kankakee; Charles H. Williams, Streator; W. T. Gormley, Chicago; Geo. A. Neeb, Chicago; J. L. Hudson, Springfield.  
BY-LAWS: F. F. Porter, Chicago; G. B. Churchill, Galesburg; L. M. Reeves, Peoria; J. D. Barnett, Decatur; J. H. Vawter, Salem.  
NOMINATIONS: D. McLaughlin, Chicago; Wm. Dittel, Peoria; R. G. Schuerer, Vandalia; Chas. McGuire, Rockford; Fred. Kurtz, Chicago.  
PRESS: W. B. Costello, Chicago; H. H. Roberts, Chicago.  
QUESTION BOX: D. E. Styles, Momence; J. Bellamy, Sandoval; J. L. Smith, Chicago.

## WEDNESDAY AFTERNOON SESSION.

President Cormick read his annual address, which was printed in last week's issue. It was received with hearty applause.

Secretary Lott read his report, which was also printed last week. The membership reached a total of 230 up to the evening of the 11th inst. This report was enthusiastically applauded.

Treasurer F. F. Porter of Chicago read his report, showing receipts during the year of \$854 and disbursements of \$654.35, leaving a balance on hand of \$199.65.



The reports of the secretary and treasurer were, on motion, referred to the Auditing Committee.

M. L. Corey, secretary of the National Retail Hardware Dealers' Association, was introduced, receiving an ovation from the members. He delivered a very interesting address, dealing with the work of the national organization.

The secretary read the following communication, dated January 31, from Robert F. Bell, Weatherford,



LOCAL BADGE.

Texas, secretary-treasurer of the Texas Hardware Jobbers' Association:

We notice that your association will hold its annual meeting shortly. There are some questions we have been agitating which the retailers and wholesalers are mutually interested in.

To accomplish anything the co-operation of all the retail and wholesale associations will have to be had. We give you below a list of the subjects that we should take it as a matter to your interest that you should give as much time to as possible in the discussion of the various subjects:

1. Are you using all the means at your command to eliminate, as far as possible, the practice of reputable manufacturers selling or permitting their goods to be catalogued by catalogue houses?
2. Do you favor the present burden on the merchant of 2-cent postage being continued in order to meet the deficit in the postal department occasioned by the wide distribution of second-class mail matter?
3. Are you fighting the parcels post bill—a measure calculated to tear down the retail trade and build up the department stores and catalogue houses?
4. Are you sitting quietly by and letting the express agent in your town act as agent for catalogue houses and department stores?

#### Parcels Post Bill.

Leon Nish of Elgin stated that the Merchants' Association of the State had the parcels post bill under consideration and were actively at work against it. Every dealer should do all he could in opposition to it.

Mr. Fahey of Decatur urged the members to bring all the influence they can to bear upon their Congressmen to induce them to vote against the parcels post bill. He also spoke earnestly in opposition to the present garnishment law of the State and denounced the members of the Legislature who had voted in favor of it.

On motion of W. T. Gormley of Chicago the letter was referred to the Committee on Resolutions.

H. C. Peppier of Chicago read the paper on

#### Co-operative Buying

printed in last week's issue.

F. F. Porter of Chicago stated in reply to a question that according to a careful estimate \$16,000 worth of goods had been bought in this manner in the past year, on which \$3500 or more had been saved to the dealers participating. In addition many goods had been bought

by dealers from manufacturers under the same management which could not be definitely traced.

Z. T. Miller of Bloomington read the following paper on

#### What of the Future?

During the early part of the last century, when town streets were so dimly lighted with common street lamps that watchmen had to patrol the streets to insure safety to pedestrians between the lamps, when competent time pieces were a scarcity and daily forecasts of weather from Government signal stations were undreamed of, watchmen cried out the hour of the night and the condition of sky and weather. In those days early morning papers containing 3 a.m. news were not looked for at the front door before breakfast, and it was not an uncommon occurrence, in the passing of more than ordinary events, for some one to call from open door or window, "Watchman, what of the night?"

Since that time we have passed from the sickle to the grain cradle, from the grain cradle to reaper, and from reaper to binder. From the lumbering stage coach, the emigrant wagon and the schooner wagon freight trains to the steam railway. From the messenger rider to telegraphy, from slow communication to instantaneous telephonic transmission.

From the country pack peddler to the cross road store, from the cross road store to rivalry in business, from friendly rivalry to ruinous competition and a struggle for supremacy in trade.

From the small individual forge to the stock company furnace and rolling mill, from the single stock company enterprise to competitive evils, and from these evils to a pooling of interests, and from a pooling of interests to syndicate ownership.

So great was the surprise of every new departure in commerce and industry and science, wonderful in their conception, radical in the changes they wrought, so rapid their introduction and so dangerous the economic



CHICAGO DELEGATION BADGE.

features associated with some of them, that to-day, with every human energy aroused to duty and every ambition stimulated by the accomplishments and experiences of the most progressive age in history to continue the march of civilization, we enter upon the duties of the new century with more than colonial like interest in "What of the night?" and seek to penetrate the darkness for some answer to the thought, "What of the future?"

#### PRESENT TENDENCIES NOT FORESEEN.

The flight of time has brought with it overwhelming evidence that the evils feared from the mechanical features of industrial improvement were totally unfounded. If our forefathers had realized the real elements of danger underlying public franchises, and had made as great efforts toward incorporating measures preventing the abuse of economic equities by the corporate bodies they created as they did to prevent the

mechanical operation of these enterprises, the savings to labor and the Government during the past 40 years would be almost beyond computation. Many of the millions of dollars now concentrated in the hands of the few would still be in the pockets of those who produced them, and the specter of their errors would not haunt and distress society of to-day. The environment of our forefathers, however, puts them beyond the pale of serious censure; but we, living in an age of universal education, extensive facilities for research and investigation, enabled to profit by the experiences of the past, knowing the force of public sentiment in the shaping of our public policies and the better advantage of concentrated effort, are amenable to a stricter censure for the perpetuation of false political economics under which hundreds of millions of dollars are annually artificially perverted or forcibly extorted from the producer by these legalized corporations.

I think you will readily agree with the proposition that the more equitably the wealth of a nation is distributed among those who produce it the greater and more lasting the general prosperity, and hence the more beneficial to every commercial interest.

It must, therefore, follow that whatever public issues may effect these conditions to the detriment of trade should receive careful and unbiased consideration in a convention of this kind. And inasmuch as the past so conclusively demonstrated that future economic effects are the most serious feature of the problems of to-day, it behooves us as merchants to thoroughly advise ourselves of their promises and in the pride of true citizenship champion and endeavor to effectually apply our convictions.

#### THE GREATEST DISTURBING ELEMENT.

Industrial corporations, whether under the name of railroad or trust or syndicate, are, without question, the greatest disturbing element in the economic fabric of to-day. They have been denounced by some orators, seemingly, without regard to circumstances or condition, or definite delineation of injury—the known quantity from which the remedy for the evil they work must evolve.

They have been supported by others with every imaginable and some almost unimaginable theories of economic evolution. They have defended them under the guise of every result derived from the mechanical operation of industrial enterprise, according to their respective purposes, and even socialistic leaders point to them as the twentieth century "John in the Wilderness," proclaiming the near approach of their dreams—a social millennium. Let us fervently hope that their theory is true, yet the uncertainty of the beginning of that age, which, after all, may not materialize until eternity, allows too speculative a period of time for the laboring masses to expect to live upon the scant hopes of this theory, and admonishes us that if we would successfully feed and clothe our bodies during the interval we have more direct duties to perform than the mere dreaming of this material millennium. In fact, I doubt whether humanity has yet reached that stage from which we might reasonably expect the universal revolution of human energy and prejudices implied in such a transmigration. The proposition, therefore, again reverts to this great truth, that the future effects of materialism evolve from our disposition of the material problems of to-day, and just as we allow political prejudices and culpable stupidity to guide our actions, or calmly and disinterestedly wait for some one else to do that which every law of nature prescribes to be our own imperative duty, just that long will we continue to co-harvest whatever injurious effect derives from such a course, and in equal ratio holds us responsible for whatever failure social progression may suffer.

#### RAILROADS NEED GREATER SUPERVISION.

I need hardly defend the proposition that railroads without traffic would be a failure, nor that the mechanical operation of a railroad train does not produce the traffic required to keep it in successful operation.

Each is equally necessary to the other, and neither performs or represents any greater stimulus to the other than that which follows as a natural sequence to

the increase of population, the greater demands of the times and the greater development of our resources.

The fact that railroads are a desirable and easy conveyance for products of labor does not entitle a railroad company to usurp an undue proportion of the proceeds of such product through unjust and exorbitant freight rates, any more than the authorities would permit such producer to confiscate a train and transport his products over a railroad without just recompense to the company owning it. Each is entitled to the same protection, and guarding the weaker against the stronger is the point at issue between the people and their political servants. I use the railroad corporations in my illustration for two reasons: 1, Being the oldest extensive corporations, they have afforded us a greater field of observation and experience with their use and abuse of corporate powers; 2, in their organism, they substantially possess all the features opposed in other corporate bodies, and whatever remedies will correct these evils may apply and subsequently become the base of Government supervision of all other large corporations. For a number of years great efforts have been made by the Government to reach and correct the evils of unjust freight rates, differentials and rebates. The Interstate Commerce Commission was inaugurated by Congress to correct these abuses, yet after years of hard labor by the Commission and large expense to the country, we discover, through the United States Courts, that this Commission stands as helpless and harmless in enforcing its purpose as a "wooden Indian."

In the January number of the *North American Review* E. P. Bacon gives a very elaborate and detailed account of "The Inadequate Powers of the Interstate Commerce Commission." It is an able article, and should be read by every intelligent citizen.

In this paper I can refer to but a few of the strong points established in Mr. Bacon's article, as follows:

The power to extort unjust rates.

The Interstate Commerce Commission without power to enforce the purpose for which it was created.

The refusal of railroad companies to obey the orders of the Commission.

Comparative receipts from railroad freights five times as great as the total revenue from import duties.

One hundred and twelve thousand miles, constituting three-fifths of the entire railway mileage, under the absolute control of five capitalists.

Tonnage of sugar shipped in 1900, 2,050,558 tons.

Average increase in freight rates on sugar, \$1 per ton.

Increased amount paid for sugar through above advance, \$2,000,000.

Sugar only one of 592 articles similarly affected.

Net earnings, after paying interest on bonded debt and dividend on stock amounting to \$118,624,409, left a surplus fund of \$142,754,358, an amount 20 per cent greater than the interest and dividend.

Mr. Bacon cites a case in which a prominent attorney admitted before the Interstate Committee that his company had never obeyed a single order from the Commission before submitting it to the Supreme Court.

#### THE SLOW PROCESS OF THE COURTS.

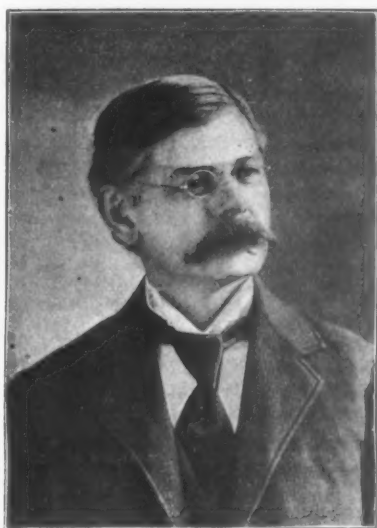
Nearly every one knows what an appeal to the United States Supreme Court means in cases of this kind. The decision will come some time during the century, but usually after the necessity for the decision is past or after the corporation has made about all out of the scheme it cares to and is ready to inaugurate a different scheme. The slow process in these courts reminds me very much of a railroad story I recently heard from one who once upon a time happened to travel on a very slow train. After giving about all the imaginary illustrations of how often that train stopped and backed up and how slowly it ran, he said, they finally came to another stop. He opened his window and looked for the cause, but failing to discover any, addressed himself to a knight of the grip on the other side of the aisle, who also had been looking out of the window, and asked why the train had stopped. The traveling man leaned back in his seat and laconically replied: "Oh, they are driving some cows off the track." After this, he said,



the train actually ran for four hours without stopping, kept going right along, too, but finally stopped. The salesman, undoubtedly getting uneasy about disappointing his wife in the engagement for the evening (that is about the only thing that would unnerve a traveling man), again looked out the window to see what was wrong. The stranger again asked him why the train had stopped. Leaning back in his seat with the meekness characteristic of the fraternity when laboring under such a strain of disappointment he replied: "Oh, we have caught up with them cows again."

#### UNREASONABLE EXTORTION.

During the last three years the revenue from import duties amounted to \$581,001,542, and the freight earnings of the railroads of the country for the same period aggregated \$5,843,038,278. There is, however, another view to be taken than the mere comparison of figures, and greatly enhances the importance of this question. The payment of import duties, or directly contributing to their payment, is almost entirely optional with the individual. There are but few, if any, of the imported articles which may not be dispensed with if one chooses



H. G. CORMICK, President.

to do so, and hence affect labor only indirectly to the extent the tariff may affect the price of home products. And inasmuch as labor, under normal conditions, usually shares proportionately in the advance of home products, its indirect contribution to tariff revenue becomes a very uncertain and insignificant quantity.

But the fact that railroad freight tariff forms an integral part of the cost of every item of commerce, whether it be food, clothing, tools or machinery or materials for whatever purpose, makes the contribution of its arbitrary portion absolutely compulsory upon every individual. The power of large corporate bodies to arbitrarily advance the price of their products and their open abuse of this power are matters of history within the knowledge of every one here. One-half cent per pound on sugar is no great advance, yet in most cases it means 10 per cent.; 3 cents per pound on Rope, 30 per cent. advance; \$1 a keg on Nails means about the same. Ten or 20 cents more freight, where we used to pay \$1. would not justify an individual to enter into litigation with a railroad company, but this does not mitigate the fact that the advance may be unreasonable extortion.

And while the sum involved in the individual cases appears insignificant, their aggregate discloses the enormous fraud the American people are subject to under present circumstances. Ten per cent. advance on the railroad freight earnings of the past three years would mean nearly \$285,000,000; or, in itself, over one-half as much as the total revenue from import duties in the same period.

Add to this an equal ratio of undue advances by the sugar trust, the steel trust, the coal trust, the twine

trust, the oil trust and the 101 other trusts, and it will readily be seen that labor, after all, pays the entire revenue tariff, with a surplus to boot, for which it receives not even the value of a sou.

The enormity of this crime upon society and the aggregate amount of money it extorts from labor and concentrates into the hands of a few, the surplus wealth which should remain in the hands of those who produced it, makes the overfavored power of corporations an evil overshadowing every political issue before the American people.

#### THE INTERSTATE COMMISSION NEEDS POWER.

There is again a bill before Congress to give the Interstate Commerce Commission the powers required to make it an effective body. Urge your Congressmen to support the measure, and warn them against amendments intended to destroy its efficiency. The railroad companies are already suggesting a dangerous amendment, under the plea that the shipper should be held equally responsible and subject to the same punishment for violation of rates granted as the company granting them.

Why, gentlemen, the railroad companies, as well as all other like corporations, have enjoyed every immunity from laws punishing crime to which the individual is held absolutely responsible, and the equal subjugation of corporations, together with proportionately adequate facilities for proof, is the very essence sought by the people.

The plea of co-punishment, smooth and proper as it may seem on the surface, is but an effort to pre-annul the purpose of the bill by throttling the shipper against divulging the secret schemes of favoritism that might be inaugurated by the fertile brains of these concerns, and leave the efforts of the Commission as futile as they have been in the past.

Congress has repeatedly been apprised of the demands of the people for a successful curbing of and relief from arbitrary power of corporate bodies under which the individual stands totally helpless, but equally as often have these demands been either ignored or whitewashed with measures as ineffectual as the Interstate Commerce Commission, until the people are looking around for some measure that may give at least partial relief from these burdens.

#### ABOLITION OF TARIFF PROTECTION.

Primarily, I believe there are but few who desire a tariff revision at this time or openly court the commercial demoralization due to the imaginary evils usually attaching to the agitation of this question.

But, as the protective feature of the tariff is unquestionably the bulwark and supporting influence of corporate powers to continue their unjust extortion, the abolition of tariff protection on the articles manufactured by these institutions is, perforce, the only relief attainable at this time. The recent panic among political leaders at Washington is plainly indicative of the extent and force of this feeling and the connivance through revolutionary tactics to arbitrarily prevent the protection an abolishment of tariff would afford, are matters every individual should carefully weigh for himself, and unprejudiced by party or precedents in Congress, determine upon his individual duty toward re-establishing conditions under which the will of the masses may be more effectually administered. If the spirit and power controlling the committee and party caucuses in Congress and Senate are resolving them into absolute monarchism to subjugate one section of the country to the other, or labor to capital, it is evidently time to inquire into how far the interests of the various districts are sacrificed through caucuses which divide our representation upon party lines and too often leave the interests of a section but half its vote upon questions of vital importance to its people. That important measures are buried through committees to prevent their discussion, and that Representatives are repeatedly coerced against individual duty and conviction, is a matter upon which we need no further evidence than the above incident.

#### THE BALLOT NO REMEDY.

The question is, What is the remedy? Some answer, "The ballot box," but it strikes me that that is about

as absurd an idea as the evolution of a material millennium through some indiscernible decree of fate. The ballot box has neither brain nor sense nor animate power to enable it to inquire into the character and views of legislative and congressional candidates or to change the names upon the ballots deposited into it by men who knew just about as much and had made just about as little effort to find out who or what they were voting. They knew the candidate's name, because they saw it on the ticket; they knew what party he belonged to because that was also on the ticket. They did not know just what that man did the two or four or more years he may have been in Congress or Legislature, nor did they know just what the candidates whose names they put into the ballot box would do if elected. It was a ballot box vote. It gives us a ballot box Congress and Legislature, and, like Mrs. Partington's son Ike and his fiddle, which the old lady said "Ike made out of his head and had wood enough left to make another," it is a case of too much wood, and some of it very knotty timber.

Men may conscientiously differ on national issues and effectually express their opinions by voting their respective party tickets, but the idea that the heading of a ticket expresses the sum total of all interests and responsibilities in an election is fraught with serious danger.

Force of character, comprehension of duty and honesty of purpose count for more in a Congressman than any political platform. The Spanish-American War was not brought about by the declaration of party platforms nor the wishes of the President, but its responsibility rests entirely upon Congress. The present imperative needs in Cuba's political condition, for immediate action by the United States, recognized and urged by the President, makes the delay in Congress subject to serious suspicion of an underlying purpose, possibly jeopardizing the economic welfare of a people, and, maybe, again force their blood into the balance to satisfy the greed of a handful of capitalists, showing the importance of individual force of character in our Congressmen, and how little they are subject to the policies under which a President holds his office.

#### GREAT FIELDS FOR ENTERPRISE.

Our undeveloped Western plains with their millions of acres presenting a field of investment for millions of capital, involving the investment of millions more in tools and implements and building and adding in equal ratio to the wealth producing forces of our country, and with a President fully understanding and appreciating the requisites to develop their fertility; the Philippine Islands, Hawaii and Porto Rico all presenting large fields for investment and increasing markets for the products of American industry as the march of civilization progresses in these new possessions, their greater production of native products improved methods will afford, the new markets and more extensive uses their cheaper production will bring about; the interchange of these articles for American manufacture, beef and other farm products; the opening of an isthmian canal to afford better and more rapid intercourse between all parts of the United States and its foreign possessions, present natural conditions favorable to an almost unlimited era of prosperity. Bright as these commercial prospects present themselves, they are marred and seriously menaced by the results obtaining under great economic evils working out their own destiny.

The indisputable truth of the old adage that "All great evils undo themselves" has recorded very bitter experiences upon the pages of history in which we need not go any further back than the history of our own country to learn their final effect. The evils of direct slavery undone themselves, but they brought on a severe struggle, the miseries and carnage of which are still fresh in our own memories.

The evils of indirect slavery obtaining under the arbitrary power of large combinations to exact the earnings of labor in whatever degree they choose, will, in accordance with the divine order of nature, work its own destiny, yet, it seems strange that, in this age of boasted enlightenment, wherein the prophetic nature of

the "seven lean and seven fat" as applied to our periods of prosperity and panic, is construed as the logic of cause and effect and not as the declaration of an irrevocable divine foreordination, men are found who, in matters of such vital importance, are still prone to sacrifice a sense of duty for the superstitious.

It has been my purpose to point out, as well as I could in so brief a paper, evils in our economic system, their cause, their effect upon the people and localities, and their consequent indirect effect upon the retail trade; the outlook for the present commercial condition, and what in my judgment may influence them for better or worse.

Take these thoughts home with you, study them over, and whatever convictions they bring, talk them over with your friends, endeavor to create a sentiment in their favor now and they will bear good fruit in the future. Work for and watch your Congressmen's action on the following questions:

An effectual Interstate Commerce Commission.

Repeal of import duties on trust manufactured goods.

An effectual measure to prevent and punish extortion by capitalized combinations.

The public irrigation of our arid lands.

The necessity of an isthmian canal.

The election of United States Senators by direct vote, first to bring them into closer relation and under direct control of their constituents, and second to avoid the evils Senatorial elections now entail in legislative elections.

Are party caucuses an element of danger to economic legislation?

Effect of centralized banks loaning money to foreign countries at a less rate than the legal interest of the territory in which such banks do business.

Keep an eye on Subsidy and Parcels Post bills.

A communication was read from the Decatur Club extending the full privileges of the club house to the members of the convention.

Announcement was made that a question box had been provided for questions to be brought before the convention for discussion.

#### THURSDAY MORNING SESSION.

The proceedings began with the reading of the following paper by L. H. Clark of Rockford, on

##### Local Associations.

It at once appeals to me as being a trifle incongruous that I should be called upon to set forth the topic of "Local Association," in consideration of the fact that my few months of association with the Hardware business may be numbered by the years of constant and unrelenting devotion to the practical and varied phases of this trade of many of those present. It may be, however, that many of you have come here not to be enlightened along lines with which you are already conversant, but more especially for the recreation and diversion of such excursion. And if such be the case the less I confine myself to statistics, and the more I dwell upon "glittering generalities," the more interest you will have in my remarks.

It has often seemed to me that it was simple enough for almost any one to discourse upon the theoretical side of affairs, and in many instances the tradesman is willing to listen to, or even read such discourses. But when it comes to the putting of this theory into practice each has his own ideas, and as a rule each individual cuts out his own little path, after his peculiar fashion. As a rule, too, the one who is given to setting out these beautiful legends for his fellow man to follow falls far short of the mark in his own individual methods.

##### THEORY AND PRACTICE.

I call to mind the case of a produce farmer of my acquaintance, who was wont to write for a certain agricultural journal. He would grind out page after page of delightful fairy tales as to the most approved methods to adopt in all branches of this work; what the architecture and specifications should be for model home, barn and other outbuildings, going into detail as to how the light should be filtered through amber glass, lest it



strain the delicate optic nerves of the horses; how the little calves should all be groomed with a fine toothed comb each morning, and how one should feed the poultry at regular hours, thus making sure of a regular supply in the egg market. In short, after taking one dose of these methods you were positive that it was the simplest thing imaginable to have a model farm—failure was a phase unknown. Yet should you chance to visit this particular individual's farm you were surprised and pained to find that all these things were not as they seemed on paper. The buildings were mere ramshackle affairs, thrown together at random. The horses were a disgrace to the name. The dear little calves were scarce indeed, but those that were to be found had just grown up without care, and as for the hens, they seldom produced an egg, for food was an unknown quantity.

So many of such cases have there been, and so abundant are they to-day, that the average tradesman, reading a flowery article in his trade journal, permits himself the diversion of the reading, but makes the mental



L. H. CLARK Secretary.

reservation that the man who wrote the article didn't know anything about his subject.

From a casual observance of our trade papers I note that the tendency of the times is toward amalgamation of interests, world's fairs and a war to the bitter end against the catalogue house. The first two of these seem to be progressing as well as might be expected, especially the world's fairs, but from a glance over the mammoth structure without and the busy departments within, as one views the establishment of Montgomery, Ward & Co., it would seem that the war had not as yet wrought any great havoc within the camp of the enemy. However, since I have to deal merely with local association I'll not air my views in regard to the catalogue house, especially inasmuch as the ventilating of an opinion often causes a coolness between friends.

#### THAT TRADE ORGANIZATIONS

are of practical worth cannot be doubted. The results obtained from an association of ideas—conservative upon the one hand and liberal upon the other—must far overshadow the accomplishments of the single mind. With trade conditions changing rapidly as they do to-day, with the advance of methods and with a general growth in all directions, it requires a keen mind to keep abreast of the times. In fact few there are who can be thoroughly or even passing well acquainted with all the varied phases of their business. In consideration of these facts, then, the association of interests comes to fill a growing need.

While the individual is making progress in one direction some seemingly minor detail escapes his notice, and before he is aware of it this detail has grown to be a vital factor. With the association of ideas, what may be

neglected by the one is grasped by some other; the result is a more perfect condition of affairs.

#### OUR LOCAL ASSOCIATION

has been in existence but two years, and yet within this period a decided change has been effected with our trade conditions, and these changes are due in great measure to the efforts of our organization.

The work has been along various lines. Primarily the main effort was directed toward an arrangement of reasonable prices upon the various staple lines. From that it has gradually broadened in other directions, and not the least to be noted of these is the social feature. The friendly attitude of one dealer to his fellow tradesman has grown rapidly, and this especial fact is due mainly to our arrangement of prices.

#### LEGITIMATE METHODS.

It is a curious fact—but true nevertheless—that one feels less keenly a sale lost to a competitor when one is positive that this competitor is getting a good price for his merchandise. And when the one has confidence that the other is maintaining honest prices it is less difficult to accord to him his proper percentage of business.

There is a satisfaction in believing that your competitor bases his business upon legitimate methods.

Association does not do away with the individuality of the firm, but it does eliminate the practice of cutting prices and the rankling hatred of the one dealer for another that grows from this source.

#### SCHEDULE OF PRICES.

The meetings of our local organization are held monthly, unless especially convened, and at these meetings trade conditions are discussed, prices arranged to conform with the markets and methods are adjusted. Following the meeting a schedule of prices is prepared by the secretary, and a copy of such schedule is mailed to each member, to be posted for reference and maintenance, the new prices going into effect 24 hours after such schedule is adopted. No fines are imposed where a price may have been disregarded by a member, but the matter is referred to an investigating committee and an explanation is requested from the individual. We have found this honor system quite as satisfactory in all respects as could possibly be the fine system.

#### POOLING ORDERS IN BUYING.

We have used our organization, too, as an aid in our buying, pooling our orders in certain lines and thus getting quantity rates, that the average retail dealer would not be entitled to. Not only has this feature been a saving, but has as well been an aid to the anticipation of wants and the keeping of a full stock.

#### EARLY CLOSING HOURS

have been established; all the legal holidays are carefully observed, and our places of business are closed throughout the entire day upon such occasions, and at the present time we are working toward a credit system whereby we may protect ourselves against the accumulation of bad accounts.

So satisfactory has our local association been in every regard, so much has it done for the individual firm, and so harmonious a condition has it engendered among the members of the trade that should it become necessary for its maintenance there is not one of our members but would gladly pay ten times the present yearly dues rather than see its dissolution.

#### HOW SUCCESS IS ATTAINED.

One reason of our success has been that we have not endeavored to do too much at the outset, we have not allowed minor detail to shut out more important features and have endeavored to nurture a healthy growth. At the present time our membership holds, with one exception, the Hardware dealers of our city, and we are confident that our strength will increase with the passing time.

Harmony of action, a concession to the ideas of the majority, a cultivation of friendly attitude toward your competitor and a conscientious and persistent effort for the advancement of your own personal business methods are the requisites of local, State and National association.

In reply to a question Mr. Clark stated that Rockford had a population of over 33,000.

Secretary M. L. Corey of the National Association said that local associations could be organized advantageously in all towns, whether small or large. Taking the matter of credits alone, a great deal of benefit can be secured. If a man is found shirking the payment of his bills, the fact can be communicated to all dealers to their great advantage. Other points were brought out showing the good results to be accomplished.

F. B. McKinney of Rockford thought that in many cases the dealers in small towns located in the vicinity of a much larger town, such as Decatur, should join with those in the large town in forming a local association, and that great benefit would then be derived by all who thus organize in maintaining reasonable prices and co-operating on other practical matters.

Messrs. Eckels and Fahey of Decatur, Bittel of Peoria, Gnad of Chicago, McKenney and Clark of Rockford, Corey of Indiana, Bagby of Tuscola, Barbour of East St. Louis, Lott, Gormley and Costello of Chicago, engaged in a discussion relative to wholesale houses doing a retail business, in which some interesting statements were made, but which led to no definite conclusion.

#### Paints.

D. McLaughlin of Chicago read a paper on "Paints." Mr. McLaughlin prefaced this paper with the statement that he had formerly devoted considerable space in his store for storage of Stoves during the summer, but he found that this business had many objections. The store was frequently untidy, and no matter how careful he might be there was always something missing or broken, according to the customer, when the Stove was called for in the spring. He decided to discontinue the storage of Stoves and to put in a stock of something to take the same space. After fully considering the subject he concluded to put in a stock of Paints. On investigating the matter thoroughly, and taking the advice of a Paint manufacturer, he put in a stock of \$600 worth of Paints and Oils. He shortly afterward found that this was hardly enough and he now carries a stock of \$900. The business is so satisfactory that he would not run a Hardware store without handling Paints. He considers that Paints naturally go with Hardware. The stock is always clean, attractive in appearance, easily handled, and yields a satisfactory profit. The paper is as follows:

I take great pleasure in presenting to you a subject which I consider of vital importance to all dealers in Hardware, and submit the same to your personal consideration.

#### CHANGING CHANNELS AND METHODS.

Competition in the Hardware business to-day, we must admit, is very active, and in order for us to continue to realize the same profit we did in the past it will necessitate changing channels and methods of doing business. This condition has no doubt presented itself to a great many and has proven a difficult problem to solve. I have given it considerable thought, and, in fact, I have made some experiments and can see but one way out of the difficulty, and that is, to increase our sales without materially increasing our expenses. This condition can be brought about to a certain extent by adding to our stock kindred lines, such as Mixed Paints, Varnishes, Brushes, &c. These goods we may safely say rightfully belong to the Hardware business, being requirements of the builder. It seems to me that the retail Hardware stock, in order to be fully up to date, should consist of everything used by the builder that can be conveniently carried in stock, in which even the country owner who is buying Hardware supplies can also buy his requirements in the Paint line without going elsewhere. The existing circumstances have not come upon us suddenly, but have been working in that direction for a number of years.

#### A PROFITABLE LINE.

Several years ago the question of handling Paints was presented to me, at which time I felt I did not have the room or experience to handle a line of that kind,

but on the earnest solicitation of a Paint salesman I decided to give it a trial, and added a line of Mixed Paints to my stock. The result was that I found I had plenty of room, as it does not require a great deal of space. The investment was not a large one and I was able to increase my sales considerably without any material increase in my expenses, and at the end of the season, when I came to close my books, I found that I had made a nice profit in addition to my usual profit on Hardware.

#### A WORD OF CAUTION.

This, no doubt, has been the experience of others, and I think it worthy of the consideration of every Hardware dealer who is not handling a line of Paints. There are, however, a great many Paints on the market to-day which would not be a profitable investment for any one, and a little precaution is necessary in deciding on the brand of Paint to handle, so that when you do sell a bill of these goods you know that the result is going to be perfectly satisfactory, and the same customer will return to you when in the market for more goods, in addition to which, so long as the building painted with goods bought of you remains in good condition, it is a constant advertisement, and inquiries for Paints from



F. F. PORTER, Treasurer.

new trade will no doubt result in sales of other lines which you carry.

Mr. Gnad of Chicago controverted Mr. McLaughlin's position relative to Stove storage and gave his method of keeping track of the condition of a Stove when received, which avoids all trouble.

Mr. Fahey of Decatur agreed with Mr. McLaughlin, stating that extra help must always be hired to handle Stoves on storage, and that the cost according to his experience was so great as to leave little profit.

Mr. McLaughlin was asked whether he had had any difficulty in securing a good brand of Paint. He stated that he received samples of Paint from 15 manufacturers. He then made a practical investigation for himself, taking pieces of board, painting one of them with each manufacturer's Paint, marking it for identification, after which he exposed all the boards to the weather for a month. He then took the one which best stood the test. He stated that good Paint cannot be bought cheap, but that a fair price must be paid for a good article. He further stated that he had quit handling Tinware, as he had found that this line also yielded very little profit. His advice to dealers was to put in a stock of Paints instead of goods which yielded little profit.

Mr. Martin of Fairfield stated that he had been persuaded to put in a stock of Paints about five years since. He found the Paint business satisfactory, although not much profit was realized on the Paint itself. It takes little room, however, and a good profit is realized on the Brushes and other articles sold with it.



Wm. T. Gormley of Chicago read the following paper on

#### The Benefit of Our Organization.

There are, no doubt, a number of the members of our association and certainly a great many retail Hardware merchants that are not members, who wonder if any benefits are gained by having a retail Hardware dealers' association. It would be well for these gentlemen to review the way business was done 15 years ago and see if the conditions have changed. Some that were in business 15 and 20 years will say that they managed their business very successfully without any organization and do not see anything to be gained by joining our association.

#### HARDWARE IN DEPARTMENT STORES.

Years ago Hardware was offered for sale only by the Hardware dealers, but these do not happen to be the conditions to-day, as Hardware, at least the articles which are most salable, are sold by the department stores and also by the manufacturer direct to the consumer. There is probably no city in our State with 10,000 inhabitants which does not have one or more department stores. These stores have taken first one article and then another until they have their "department of Hard-



W. T. GORMLEY, Member Executive Committee.

ware," and take one item of some well-known brand, which you Hardwaremen have created a demand for in years of labor, and they will advertise it for one day at a price sometimes at a loss to themselves in order to give to the public the idea that they sell cheaper than any one else; and it also leaves the price in the mind of the consumer, so that when he goes to the Hardware store to purchase it he feels that he should buy it at any time from you at the price which he saw it advertised for, and if not he thinks the department store is so much cheaper that, for articles which he knows nothing about, he pays more for than he could purchase them at the Hardware store. No doubt all of you gentlemen have had experience of this kind.

#### MANUFACTURER TO THE CONSUMER.

Then we hear of the manufacturer taking orders direct from the consumer, and when you ask why they do it they will tell you that if they do not the "other fellow" will. We do not know whether this other fellow is a representative of the manufacturer or the retailer. I know of one retail Hardware firm who created a demand for an article used in the manufacturing line and bought from \$400 to \$500 worth per month. The representative of the firm which manufactured this article made a number of inquiries as to where they were being used and found out from one of the clerks. The following month he went direct to the consumer and quoted

the same price the Hardware dealer had been paying for them, and which the retailer had now lost, and when asked why he did it he replied, "It was such nice business I hated to lose it." This may be consolation for the retailer, but he certainly cannot pay his expenses with it.

This reminds me of the story I heard not long ago of a man who went fishing. Going out into the country to the hotel where he was to stop, he asked a man if he knew where he could get some worms. He said he would get them for him, and went away, soon returning with a large pail full. He was asked how much he wanted for his trouble, and the man asked how much he would give, and the reply was that he would give him half the worms. I have been unable to find out if this was the same man who sold goods direct or not, but certainly if it was not him it was his first cousin.

We certainly cannot compete with the manufacturer, but we can, as an association, consider a manufacturer that retails direct to consumers a competitor, and if he wishes to do a retail business let him do it under the same expenses as a retailer and let the retailer purchase of such people as prefer to have their goods go through legitimate channels—first the dealer, then the consumer.

#### BUILDERS' HARDWARE.

We might take it in the Builders' Hardware line. If there is a large building being erected, every one who manufactures Builders' Hardware wants to sell his goods on that particular building. The retailer is forgotten, and they all go direct to the consumer, each insisting that they ought to have their particular Lock on his door, and when the order is given to one of them the others seem satisfied. If they had left the business to the retailer but one of them would have received the order, as the man could not put five Locks on his one door, even if four of them were presented to him, and when you complain to them for doing this thing they sometimes offer to turn over the business to you and give you 5 per cent. margin of the profit. I wonder if any of these men are doing business and paying their expenses out of 5 per cent. profit.

I believe that with our present association these matters can be brought to the attention of the manufacturers' association and be adjusted to the satisfaction of all, as the trade of the Hardware dealer throughout the country certainly must be more desirable than that of the consumer.

As an organization a great many things can be accomplished which cannot be done by individuals, and let us hope that every Hardware dealer in the State of Illinois will join this association for the benefit of many and in justice to all.

#### Discussion of Builders' Hardware Question.

Mr. McLaughlin of Chicago stated that his principal business was in Builders' Hardware. He had found that in his city the representatives of manufacturers of Builders' Hardware go to the owner of a new building or to the architect and specify for all the Hardware needed, even for a small two or three story house, and include every article in the Hardware line needed. This is done in many cases in which a Hardware dealer makes out a specification for the owner, giving special classes of Hardware which must be secured from the manufacturers. His advice to dealers is, therefore, specify nothing, but let an owner buy where he pleases, figuring only on such goods as the dealer may have on his shelves. This brought out a very interesting discussion, in which Messrs. Fahey of Decatur, Gormley of Chicago, Miller of Bloomington and Williams of Streator participated. Mr. Gormley stated that there are but a small number of manufacturers of the full line of Builders' Hardware and believed that a conference could be arranged with them which would have satisfactory results.

Mr. Fahey moved that the architects of Illinois be memorialized by the association and requested not to specify any particular numbers of Hardware. On motion of Mr. Gormley this motion was referred to the Committee on Resolutions.

**THURSDAY AFTERNOON PROCEEDINGS.**

Vice-President Wm. Bittel of Peoria took the chair in the absence of the president, who was engaged in committee work.

Charles H. Williams of Streator read the paper on "Mental Equanimity" which was printed in last week's issue.

President Cormick resumed the chair. F. F. Porter, chairman of the Committee on By-Laws, recommended the following additional section, which was unanimously adopted:

Section 8. Any member who shall be in arrears one year's dues shall be dropped from the rolls of this association, but may be reinstated to full membership by paying in full all arrears before or at the next annual meeting.

Announcement was made that all dealers living in Decatur and vicinity were requested to remain in the hall after adjournment for the purpose of forming a local retail dealers' association.

Charles H. Williams of Streator, for the Committee on Resolutions, presented the following, which were adopted:

**Resolutions.**

*Resolved*, That whereas Otto Schulte of Freeport, Ill., has been called away by death, we, the Illinois Retail Hardware Dealers' Association, in esteem for the many



Z. T. MILLER, Member Executive Committee.

good qualities which characterized his membership with this association, hereby extend our sympathies to the bereaved family and his associates.

*Resolved*, That a copy of these resolutions be spread upon the minutes of the association, and that a copy be forwarded to the family of the deceased.

*Resolved*, That in appreciation of the very able manner in which the local committee arranged the accommodations for holding this convention, we extend to them our sincere thanks.

*Resolved*, That we extend a vote of thanks to the local press, the citizens of Decatur, and its various clubs and societies for the courteous treatment extended to us while among them.

*Resolved*, That we extend the thanks of the association to the trade press for the courteous announcements of our meetings and fairness in treating the proceedings of the association.

*Resolved*, That we extend to W. L. Corey, the National secretary, our hearty thanks for the invaluable services he has rendered the association.

*Resolved*, That we heartily approve the labors of the National Association in the direction of preventing the handling of standard lines of goods by illegitimate dealers, and that we pledge our full support in whatever action that may be determined by the National Association.

*Resolved*, That we are opposed to the enactment of a parcels post law, which in our estimation comes under the head of class legislation, and hereby instruct our secretary to forward a copy of this resolution to the Congressmen representing the State of Illinois.

*Resolved*, That we favor a revision of the present bankrupt law and the enactment of a peddlers' license law, and would suggest that both these questions be referred to Legislative Committee.

*Resolved*, That, owing to the large loss to the trade in Stove Repairs not being properly marked, it is the sense of this meeting that manufacturers of Stoves and Stove Repairs specifically mark such castings.

*Resolved*, That we fully appreciate the labors of President Cormick and Secretary Lott on behalf of the association and approve their official acts.

*Resolved*, That we are in favor of an act of Congress giving the Interstate Commerce Commission full power to enforce the purposes for which it was created.

*Resolved*, That we emphatically denounce the present garnishment laws in the State of Illinois as unjust to creditors and injurious to the best interests of society, and that we recommend in its stead a law based upon a certain percentage of the debtor's earnings.

*Resolved*, That it is the sense of this association that much good will be accomplished by a joint meeting between a committee representing the manufacturers of Builders' Hardware and the National Retail Hardware Dealers' Association, and we therefore earnestly appeal to the National Retail Hardware Dealers' Association to make the necessary arrangements for such a conference.

**Bloomington Chosen.**

Leon Nish of Elgin, for the committee on place of holding the next meeting, made a report recommending Bloomington, and a motion to adopt the report was carried without a dissenting voice.

D. McLaughlin of Chicago, chairman of the Committee on Nominations, reported the following list:

**Election of Officers.**

PRESIDENT, H. G. Cormick, Centralia.

VICE-PRESIDENT, Daniel Holder, Bloomington.

SECRETARY, H. L. Clark, Rockford.

TREASURER, F. F. Porter, Chicago.

EXECUTIVE COMMITTEE: H. G. Cormick, Centralia; Daniel Holder, Bloomington; L. H. Clark, Rockford; F. F. Porter, Chicago; Z. T. Miller, Bloomington; W. T. Gormley, Chicago; H. N. Murphy, Galesburg; Charles Mauer, East St. Louis; R. G. Scheurer, Vandalla; F. W. Sleske, Freeport.

INVESTIGATING COMMITTEE: G. R. Lott, Chicago; F. Glessing, East St. Louis; L. M. Reeves, Peoria; M. Fahey, Decatur; M. Seaman, Greenville.

LEGISLATION COMMITTEE: C. W. Zumbrook, Springfield; William T. Gormley, Chicago; David Riefor, Ottawa; H. G. Bagby, Tuscola; J. A. Hunter, Peoria.

The report was unanimously adopted. On motion, the secretary cast one ballot for each of the officers, and they were declared duly elected.

The Committee on Nominations also recommended that H. G. Cormick and G. R. Lott be chosen as delegates to represent the association at the next meeting of the National Association. The recommendation was adopted.

Leo Krueger of Chicago, for the Auditing Committee, reported that the books of the officers had been examined, and found correct, and recommended that the chair be instructed to divide the State into eight districts, more or less, in each of which a solicitor or captain should be appointed for the purpose of soliciting new members, to receive for his compensation the fees of each new member as enrolled. They also recommended that the official manual of the National Association, together with all advertisements contained in a similar edition, be printed under the direct supervision of the national officers. The report was adopted.

A motion was carried that an order be granted for \$200 for the payment of the secretary's salary for the past year.

Announcement was made that each member would be furnished with a rubber stamp, bearing on it the statement, "Affiliated with the National Retail Hardware Dealers' Association, Illinois Branch." This stamp is designed to be used on all letters or other documents when deemed desirable.

**President Cormick Accepts.**

President Cormick took the opportunity of addressing the convention to express his thanks for his re-election and his appreciation of the honor which had thus twice been conferred upon him. He had come to the convention with the conviction that it would be wise for the association to elect a new president from the center of the State, and thus secure some one who was geo-



graphically and otherwise better fitted to carry on the work. He had found that his views were not approved, and, as the sentiment of the convention was evidently too strong for him to oppose it, he accepted their decision, and promised that he would, as in the past, do everything in his power to advance the interests of the organization.

#### Retail Merchants' Insurance Company.

O. A. Bibbins, representing the Retail Merchants' Association Mutual Fire Insurance Company of Illinois, whose headquarters are at Springfield, addressed the convention regarding the plan on which the business of that insurance company is conducted. In reply to a question, the fact was brought forth that many of the members are now insured in this company, and are pleased with the manner in which its operations are conducted.

#### Other Addresses.

Mr. Broderick of the American Wringer Company, George D. Hoffman of the Wireton Heating Company and W. H. Bennett of the Reading Hardware Company made addresses regarding the work of the association, and expressed themselves as warm advocates of the organization of retail Hardware dealers. Mr. Bennett approved the action which had been taken relative to Builders' Hardware. He said that the manufacturers



R. G. SCHEURER, Member Executive Committee.

of Builders' Hardware are reasonable gentlemen, and that they would undoubtedly be found willing to co-operate with the retail Hardware trade.

#### Question Box.

The Question Box was opened, and the first one presented for discussion was the following:

*Should a retail merchant solicit trade in other towns than his own?*

This was discussed by Messrs. Pepler and W. J. Krueger of Chicago, who believed that the field should be open to any one. Mr. Bixner of Chicago took the opposite side, believing that ordinarily a retail merchant does not go out of his store to solicit business, but waits for it to come to him. In his experience, going out to solicit business causes a dealer to cut under another dealer's price to secure it.

*Is Glass a legitimate addition to the retail Hardware line and if so what percentage of the trade handle it?*

Mr. McLaughlin of Chicago stated that he handled Glass, and asked all members who likewise sold it to raise their hands. About one-fifth of those present did so. Messrs. McLaughlin, Pepler and others gave their experience in handling Glass, and recommended that the dealers should follow their example.

*Should we not make a special effort to induce jobbers to refrain from selling to catalogue houses and department stores?*

Mr. Styles of Mومence said it was equally important that jobbers should refrain from doing this, as well as manufacturers, and that efforts should be made to induce them not to do so.

Mr. McLaughlin of Chicago stated that he could say positively that some of the jobbers after supplying retail dealers with seasonable goods would then dispose of their surplus at cut prices to catalogue houses and department stores.

President Cormick said that the National Jobbers' Association have proved themselves good friends of the retailers. Conferences held between representatives of the National Retail Hardware Dealers' Association and the Jobbers' Association have been along this line. He regretted that a number of the jobbers doing business in Illinois are not members of the Jobbers' Association. The friction between jobbers and retailers is, however, gradually being eliminated.

*On the amount of yearly purchases, what percentage does it cost you to do business?*

Messrs. Eckels of Decatur and Bittel of Peoria discussed this question, their experience making the percentage run from 20 to 25.

*Do we favor the complicated manner of Stove manufacturers in numbering and naming their Stoves, to the detriment of our business in gaining the correct name and number from our customers in getting repairs?*

This question brought out quite a long discussion, in which Messrs. Bagby of Tuscola, Cormick of Centralla, Fahey of Decatur, Clark of Rockford and Styles of Mومence participated. The point was drawn out that the great difficulty encountered by a dealer was to secure from his customer the correct name and number of a Stove for which repairs were desired. President Cormick stated that he uses a blank, which he requires his customer to fill, and finds this method quite satisfactory.

Mr. Fahey stated that he is often obliged to educate a customer how to find the name and other necessary details to describe his Stove. Records of all customers are kept, as well as the Stoves for which they have ordered repairs, and this frequently facilitates business of this character.

Mr. Clark uses a card index system. These cards have blanks on them, showing all details required, and after they are filled by the customer they are deposited in a box made for the purpose, and these boxes are run in monthly series. Track is thus easily kept of the repairs in transit, and after the repairs are received the card is transferred to another box, in which it remains on perpetual record. He found the card system much more satisfactory than a book.

Mr. Styles asked if anything had been done to induce Stove manufacturers to confine themselves to collars of regular size; for instance, to 5, 6 or 7 inch instead of 5½, 6½, &c.

President Cormick said this matter was too large a question for a State association to handle and belonged to the National Association. On motion the matter was referred to the National Association.

*Should dealers handle goods made under special jobbers' brands in place of manufacturers' brands?*

Mr. Styles said that this question has two sides. If a dealer selects a good line and should have his own name put on it, and should then succeed in building up a good trade in this line, it would be a great advantage to him in many respects.

*Is it right for outside dealers to give an agent orders for Stoves or any other articles to be sent to his home town for himself or friends?*

Interesting experiences were brought out by Messrs. Porter of Chicago and Cormick of Centralla relative to practices of this character.

The business of the convention having been concluded, an adjournment was taken at 4.25 p.m., to meet in Bloomington in 1903.

### THE CHICAGO DELEGATION.

Chicago contributed largely to the success of the convention, as on previous occasions. The Chicago members made elaborate preparations long in advance of the meeting. They engaged a special train on the Wabash Railroad, which left Chicago at 2.30 on Tuesday afternoon, arriving at Decatur at 8.30 that evening. On this train were the following dealers:

Wm. T. Gormley, Chicago.  
D. McLaughlin, Chicago.  
W. J. Krueger, Chicago.  
J. L. Smith, Chicago.  
G. A. Lott, Chicago.  
John M. Ruedel, Chicago.  
A. Pophal, Chicago.  
P. H. Schuster, Chicago.  
H. O. McClure, Chicago.  
A. J. Engelhardt, Chicago.  
Martin Engelhardt, Chicago.  
G. A. Neeb, Chicago.  
John Schubert, Chicago.  
C. A. Dalstrom, Chicago.  
H. E. Rebmann, Chicago.  
Sigmund Melohn, Chicago.  
Fred. Kurtz, Chicago.  
Frank F. Porter, Chicago.  
Leo Krueger, Chicago.  
G. E. Gundling, Chicago.  
J. H. Bixler, Chicago.  
W. M. Powers, Chicago.  
J. H. Powers, Chicago.  
Carl Herzog, Chicago.  
H. E. Gnadt, Chicago.  
A. Greenheid, Chicago.  
L. Rosenberg, South Chicago.  
Jacob Butwies, South Chicago.  
John Black, South Chicago.  
Chas. J. Connor, Evanston.  
Fred. Waller, Lyons.  
L. D. Nisch, Elgin.  
L. H. Clark, Rockford.  
F. P. McKenney, Rockford.  
C. E. McGuire, Rockford.  
L. F. Schroeder, Barrington.  
Chas. H. Williams, Streator.  
David Refior, Ottawa.

Accompanying the dealers were manufacturers, jobbers, salesmen and press representatives, as follows:

W. H. Bennett and W. E. Herrmann, Reading Hardware Company.  
J. O. Becraft, Estate of P. D. Beckwith.  
J. D. Warren, J. D. Warren Mfg. Company.  
Henry J. Sawyer, Jr., Joliet Stove Works.  
George S. Auer, Auer Register Company.  
Geo. D. Hoffman, Wireton Heating Company.  
Richard H. Gardner, Niles Mfg. Company.  
W. B. Lyman, Brand Stove Company.  
Evans Nelson, Lawson Mfg. Company.  
James Fentress, Jr., and C. C. Kelly, Cleveland Foundry Company.  
Chas. T. Lawton, Lawton Cutlery Company.  
E. H. Rowison, Standard Oil Company.  
Louis A. Denoyer, J. L. Perkins & Co.  
W. C. Nelson, American Screw Company.  
Stephen M. Perrigo, C. M. Avery & Co.  
Robert Althison, Robert Althison Perforated Metal Company.  
John J. Sinzich, Geo. H. Bishop & Co.  
M. Brucker, stove repairs.  
John V. Patten, Charles Smith Company.  
A. C. Selleck.  
Daniel Stern and S. P. Johnston, *American Artisan*.  
H. H. Roberts and Geo. W. Cope, *The Iron Age* and *The Metal Worker*.

Refreshments were bountifully served en route, the contributors to the fund for this purpose being *The Iron Age*, *American Artisan*, Estate of P. D. Beckwith, Reading Hardware Company, Bullard & Gormley Company, Brand Stove Company, J. D. Warren Mfg. Company, Lawson Mfg. Company, M. Brucker, Charles Smith Company, American Screw Company, J. L. Perkins & Co., A. C. Selleck, Auer Register Company and Geo. H. Bishop & Co.

On arriving at Decatur a brass band was found in waiting, which had been previously engaged by the excursionists. They formed in procession and marched to the hotel, making quite an imposing demonstration.

### CONVENTION NOTES.

Decatur surprised most of the members, especially those coming from Chicago. They had expected to see an ordinary town, presenting few interesting or prepossessing features. They made the discovery that it is a fine city of over 20,000 inhabitants, with handsome

business blocks which would be creditable to any large city. It has an extensive system of electric railways, the streets are broad and well paved, and electric lamps on tall towers light up the entire place at night. It enjoys ample railroad facilities, being a junction point for 13 different roads. It further enjoys the distinction of being the location of the Morehouse & Wells Company, who do a large wholesale Hardware business. The convention met in Elks' Hall, admirably fitted for the purpose and situated in a modern office building, equipped with elevators and well finished in every other respect.

The Morehouse & Wells Company are probably the largest jobbing house in Southern Illinois. The business was established in 1859, in a small way, and each succeeding year has shown a handsome increase in the business transacted. They occupy quarters at 134 to 140 East Main street, Decatur, the present building having been erected by them in 1895. It is six stories high, with basement, has a frontage of 44 feet and extends 152 feet in depth. The building having been erected for the purpose for which it is at present being utilized, it is naturally well adapted to the needs of the company, having all the necessary conveniences for the rapid and economical handling of goods. The company also have a warehouse 46 x 120 feet, which is devoted principally to the storage of Nails, Wire, Fencing, &c. The company carry a large and well assorted stock of Shelf and Heavy Hardware, fine Builders' Hardware, Mechanics' Tools, Iron, Sheet Metals, Tin Plate, Ammunition, Stoves and Mantels, House Furnishing Goods, Glass, Paints and Varnishes. They make a specialty of Royal Field Fencing and have the exclusive sale of this Fencing in the States of Illinois, Missouri and Iowa. This Fencing has many features of merit and is made in 22 sizes. The company are incorporated for \$120,000. The officers are as follows: G. E. Morehouse, president; F. P. Wells, vice-president; C. M. Hurst, secretary, and E. P. Bishop, treasurer.

The manufacturing interests of Decatur are important. The establishments connected with the Hardware and kindred trades are as follows, their specialties being also given:

U. S. Wire Mat Company.  
R. R. Montgomery & Co., the King fly killer.  
H. H. Brown Mfg. Company, Dehorners and Hog Rings.  
Decatur Coffin Company, Screw Drivers.  
Faries Mfg. Company, Hardware Specialties.  
F. B. Tait Mfg. Company, Corn Shellers.  
Decatur Cornice & Roofing Company, Radiator and Register Shields.  
H. Mueller Mfg. Company, Steam and Plumbing Goods.  
Chambers, Bering & Quinlan Company, emery Grinders for agricultural implements.

The comfort and entertainment of the visitors were carefully looked after by a local committee, consisting of C. M. Hurst and B. W. Dillehunt of the Morehouse & Wells Company, and J. P. Eckels, C. M. Barnett, M. Fahey, B. M. Dennis and W. L. Ferguson, local retail dealers. It is to be noted to the credit of Decatur that every dealer in that city is a member of the Illinois Association but one, who happens to be absent from home.

C. M. Hurst of the Morehouse & Wells Company entertained a party of gentlemen at the Country Club at Decatur on Wednesday evening. The guests were driven from the St. Nicholas Hotel to the club house, which is located a few miles from the city in a most picturesque locality, where the club owns large golf links. Here a fine dinner was served, which was interspersed with speeches and other entertaining features, making the occasion an event which will linger long in the memories of those present. Following is a list of the participants: F. P. Wells, Morehouse &



Wells Company; John Le Page, Bridge & Beach Mfg. Company; J. O. Becraft and Robert R. Elliott, Estate of P. D. Beckwith; Joseph B. Chandler, C. Sidney Shepard & Co.; John C. Buckley, George M. Clark & Co.; H. C. Quest, Heath & Milligan Mfg. Company; A. Corson, Black & Germer; W. H. Bennett, Reading Hardware Company; W. T. Gormley, Bullard & Gormley Company; Lewis M. Reeves, Peoria; F. R. Shull, Decatur; Daniel Stern and S. P. Johnston, *American Artisan*; H. H. Roberts and Geo. W. Cope, *The Iron Age*.

#### The Banquet.

The local dealers of Decatur showed their appreciation of the selection of their city for the convention by tendering a banquet, which was held at the St. Nicholas Hotel on Thursday evening. They made such preparations for this event that it proved a success in all respects, forging another strong link in the chain which unites the Illinois retail dealers in close bonds of fraternity. A very attractive menu was prepared, which, together with the programme of toasts, was printed in pamphlet form, bound in tinted covers, tied with a silk bow. A mandolin orchestra furnished music during the evening.

As it was found advisable to shorten as much as possible the time spent in the dining room, a departure was made from the usual course of procedure and the toasts were interspersed with the courses. R. I. Hunt of Decatur filled the exacting position of toastmaster with great credit to himself and pleasure to his hearers. C. H. Williams of Streator responded to the toast, "Illinois as a Hardware State;" H. G. Cormick of Centralia, to "Association Work in Illinois;" Hon. Owen Scott, editor of the Decatur *Herald*, to "Decatur;" R. R. Elliott of the Estate of P. D. Beckwith, to "Mutual Interests of Buyer and Seller;" John F. Parker of the Schneider & Trenkamp Company sang a baritone solo; Daniel Stern, *American Artisan*, responded to the toast, "Twentieth Century;" F. E. Bonney, Paxton Hardware Company, to "Camp Followers;" W. H. Bennett, Reading Hardware Company, to "Don't Irritate;" H. H. Roberts, *The Iron Age*, to "Power of the Press;" L. H. Clark of Rockford, to "The New Secretary;" Carl Sommer of the Majestic Mfg. Company and C. R. Graves of the Detroit Stove Works, furnished a musical diversion; Geo. W. Cope, *The Iron Age*, responded to the toast, "Good Fellowship." The banquet was attended by about 150 persons, and the exercises did not terminate until long after midnight.

#### The New Secretary.

L. H. Clark, the new secretary, belongs to the younger generation of Hardwaremen. He is a ready speaker, and took a prominent part in some of the discussions before the convention, impressing the convention by his ability to grasp the strong points of the subject at issue. He was a student of Cornell University for three years, taking the course in mechanical engineering. Returning home he engaged in the Hardware business which his father had established under the name of the J. L. Clark Hardware Company.

#### Badges.

The members were almost covered with badges, pins and other embellishments. The Chicago members had their own distinctive badge, another was furnished by the State Association, another by the local committee and another by the Bloomington dealers, bearing the legend, "For Bloomington in 1903."

#### EXHIBITS AND SOUVENIRS.

The corridors and sample rooms of the St. Nicholas and the Decatur hotels were crowded with exhibits made by manufacturers and jobbers.

The Wilcox Mfg. Company, Aurora, Ill., showed a large line of samples of their specialties, comprising House Door Hangers, Barn Door Hangers, Mounted Grindstones, Carpenters' Bench Stops, Improved Gate Latches and numerous other specialties. These samples were handsomely finished, many of them being nickel plated. The attention of the callers was particularly drawn to the Velox and Modern Atlas Mounted Grind-

stones. The Velox has a steel and the Modern Atlas has a wooden frame, the stones running on ball bearings. The exhibit was in charge of H. O. Spencer.

J. D. Warren displayed a large number of photographs, showing the Hardware Shelving and ingenious fixtures for Hardware stores made by the J. D. Warren Mfg. Company, Masonic Temple, Chicago. The photographs enabled the many combinations of these fixtures to be readily shown. Mr. Warren distributed a very attractive memorandum book.

The M. & D. Range Company, Chicago, exhibited one of their standard M. & D. Ranges, their new American Range and a combination Range for the use of both gas and coal. The combination Range was a beautiful piece of work, and was finished with a rolling top over the cooking holes, to enable odors to be drawn up a flue. The company were pioneers in the manufacture of Wrought Iron and Steel Ranges. This exhibit was in charge of J. H. Farquharson.

The Wireton Heating Company, Blue Island, Chicago, exhibited one of the Wireton Draft Regulators, consisting of a clock arrangement by which the opening and closing of a furnace or boiler draft can be arranged for a particular time. They also exhibited a line of Hot Air Registers and distributed literature of their varied line of Hot Air Furnaces. This exhibit was in charge of George D. Hoffman, who distributed a clever card calling attention to his specialties.

The Rochester Stamping Company and the Robeson Cutlery Company of Rochester, N. Y., made a joint exhibit. The display of the former company ran over a line of rust proof ware up through an extensive exhibit of Nickeled Copper Tea Kettles, Tea and Coffee Pots, Chafing Dishes and ware for the table, such as Creamers, Sugars, &c. The latter company showed over 700 Pocket Knives, 160 Razors, samples of 6 lines of Shears, 2 lines of Scissors and 20 lines of Kitchen Knives, all of which are made in the different lengths and are the product of their four factories. They further showed an interesting variety of the advertising work which they are doing for their customers. This advertising is novel and is stated to be very effective. Visitors were presented with souvenirs in the shape of sharp Pocket Knives. C. C. Miller and H. W. Beegle were in charge.

E. C. Atkins & Co., Indianapolis, Ind., displayed a full line of Hand Saws, Back Saws, Pruning Saws, Kitchen and Butchers' Saws, Stair Builders' Saws, Hack Saws, Plastering Trowels and high grade Silver-Steel Cabinet Scrapers. Conspicuous among these were the No. 68 Mirror Finish Saw, with Perfection Handle, and the No. 73 Combination Rip and Cut Off Saw. They distributed a novel advertising device, consisting of a heavy paper frame, having a bottom pull, which on being operated showed two appropriate pictures apparently dissolving into each other. Frank Wells and George W. Gladding were in charge.

C. M. Avery & Co., Chicago agents of Atkins & Co., made an exhibit in the same room of other lines which they represent, comprising samples of Shears made by the Iowa Cutlery Works, Cedar Rapids, Iowa; Butcher Knives by the Clyde Cutlery Company, Clyde, Ohio; Connecticut Meat and Food Choppers, &c. S. M. Perigo was in charge of this display.

B. C. Millington, representing Taplin, Rice & Co. and May & Fieberger, both of Akron, Ohio, exhibited the Modern Climax Steel Range and the Climax Hot Blast Heater, and distributed literature relating to the Akron Air Blast Furnace, together with lead pencils advertising Climax Stoves and Ranges.

The Joliet Stove Works, Joliet, Ill., exhibited samples of their goods, comprising two Steel Ranges, a Steel Cooking Stove and two Heaters. One of the Ranges is the new Premium Range, just brought out by this company. This Range is a handsome piece of work and represents the most modern ideas in Range construction. The company are originators of the Steel Cooking Stove and also of Moore's Air Tight Stove for soft coal. One of the Heaters shown was an air tight oak hot blast, which has recently been brought out by the company and is meeting with much success. This exhibit

was in charge of G. H. Sawyer, Jr., E. H. Mitchell and Carl Phillips.

Farwell, Ozmun, Kirk & Co., St. Paul, Minn., made a very large display of their special line of Cutlery and Table Ware. Their Cutlery is made under the brand of Henry Sears & Sons and comprises a full line of Pocket Knives, Butcher Knives, Razors, Shears, &c. Their Silver Table Ware is named the Queen line and consists of exclusive patterns. This exhibit was in charge of Frank L. Farra.

F. P. Van Hook, Normal, Ill., exhibited the Usona Combination Curtain Holder and Window Fixture.

The Cattaraugus Cutlery Company, Little Valley, N. Y., exhibited a full line of Pocket Cutlery, comprising a great variety of samples, as well as Razors, Strops, Shears, &c. This display was in charge of H. P. Corwith.

The Rollman Mfg. Company, Mount Joy, Pa., exhibited the Rollman Improved Cherry Seeder, the Rollman Improved Peach Stoner, the Rollman Food Chopper and the Rollman Apple Cutter. These are all very ingenious devices for performing the operations indicated and attracted much attention. Byron Lindemuth was in charge.

The H. F. Brammer Mfg. Company, Davenport, Iowa, exhibited one of their well-known O. K. Washing Machines, and the Lyons Specialty Company displayed one of their new Steel Barn Door Latches and Holders, showing its method of use. William Peterson, Lyons, Iowa, was in charge of both these exhibits.

The Art Stove Company, Detroit, Mich., made an exhibit of Steel Ranges and Heating Stoves. The Steel Ranges represented four different sizes of the Twentieth Century Steel Range, all made on the same principle, but finished differently to conform to the varying requirements of consumers. These Ranges have special features in the arrangement of their flues, by which the heat is evenly distributed over the oven bottom and the complete top of the Range is heated when the direct draft damper is open. The Heating Stoves were samples of the Twentieth Century Laurel Soft Coal Heater, which has a slotted fire pot, enabling a hot air blast to be evenly introduced into the fire pot, thus securing perfect combustion of the fuel. George H. Fowler was in charge and distributed nickel plated Carrie Nation hatchets as souvenirs.

The Auer Register Company, Toledo, O., exhibited the Side Wall Register brought out by the company a few years since, which has proved exceedingly popular in the hot air heating trade. George S. Auer, the inventor, was in charge and fully explained the merits of his device.

W. B. Belknap & Co., Louisville, Ky., made a remarkably fine display of Pocket Cutlery. They handle 12,000 patterns of Knives, their line comprising the Electric, Prindle, Prussian, Wismer, Spear, John Russell and Blue Ribbon. They claim their assortment to be the largest in America. This display was in charge of M. R. Porter, assistant secretary of the company, who had able colleagues in Jesse Lee, D. C. Hageman, Carl C. Potter and James Woods. They favored every visitor with a handsome Pocket Knife as a souvenir.

A. C. Selleck, Chicago, exhibited one of his Common Sense Fuel Savers, consisting of a completely new type of drum or radiator to be attached to a Stove Pipe. This Radiator heats by circulation, as it consists of a number of vertical flues through which the air is drawn from the floor and discharged at the top of the drum.

The Brand Stove Company, Milwaukee, Wis., decorated the watch chains of the members with a gold plated medal bearing the name of the company and their trade mark. They were represented by W. B. Lyman and C. L. Franklin.

The Majestic Mfg. Company, St. Louis, Mo., distributed artistic aluminum pin trays. The company's representative was Carl Sommer.

The Estate of P. D. Beckwith, Dowagiac, Mich., distributed nickel plated match boxes, having a representation of a Round Oak Stove on one side and the famous Indian, Doe-wah-jack on the other side. They

also gave out stick pins representing a Round Oak Stove so neatly stamped out in sheet metal that it made quite an attractive decoration. The company were represented by J. O. Becraft and Robert R. Elliott.

The Lawton Cutlery Company, Chicago, gave everybody a pack of Fauntleroy enameled playing cards. A label on these cards called attention to the "Square Deal" Cutlery manufactured by this company. They were represented by Charles T. Lawton.

The Peninsular Stove Company, Detroit and Chicago, distributed leather covered memorandum books containing maps of the United States and its foreign possessions, with other useful information. W. T. Whiffen and J. B. Wilson represented the company.

F. F. Porter, Chicago, distributed catalogues of the Porter warm air Furnace, which he manufactures, in addition to running a retail Hardware store. It is made in four sizes, suitable for coal, coke or gas.

The J. L. Clark Hardware Company, Rockford, Ill., distributed illustrated circulars of the Gem Flue Stops which they manufacture. The springs fold flat, thus facilitating boxing for shipment.

The Reading Hardware Company, Chicago, distributed souvenir pencils inclosed in aluminum pocket cases capable of forming an extension pencil holder. They further presented everybody with a stick pin having a miniature thermometer on a celluloid setting, a variety of designs being used. The company were represented by W. H. Bennett, W. E. Herrmann and W. A. Kromer.

Herzog & Spindler, Hardware dealers, 579 to 587 West Chicago avenue, Chicago, distributed specimens of an effective advertising device which they are using. It is apparently a piece of chewing gum in the regulation wrapper labeled "Free sample, Golden Pepsin Gum, not made by a trust. This chewing gum prevents that tired feeling and produces mirth and happiness." Instead of gum a piece of brown cardboard is inclosed, bearing on it the firm's business card.

In addition to those whose names are mentioned above, the following representatives of manufacturing and jobbing interests and kindred lines were observed in attendance:

John F. Parker, Schneider & Trenkamp Company, Cleveland and Chicago.  
John Le Page and Frank S. Hawken, Bridge & Beach Mfg. Company, St. Louis, Mo.  
W. J. Paterson, P. & F. Corbin, Chicago.  
F. W. Persons, Jackson Knife & Shear Company, Fremont, Ohio.  
Louis A. Denoyer, J. L. Perkins & Co., Chicago.  
D. B. Smith, Cedar Rapids Pump Company, Cedar Rapids, Iowa.  
Franklin V. Elder, Follansbee Bros. Company, Pittsburgh, Pa.  
A. Corson, Black & Germer, Erie, Pa.  
John C. Buckley, George M. Clark & Co., Chicago.  
Geo. W. Trout and Fred. Gordon, Geo. W. Trout & Co., Chicago.  
A. C. Ohlendorf, manufacturers' agent, Chicago.  
G. S. Winder, Hibbard, Spencer, Bartlett & Co., Chicago.  
C. McWilliam, United States Company, Chicago.  
C. R. Graves, Detroit Stove Works, Detroit, Mich.  
Jos. B. Chandler, C. Sidney Shepard & Co., Chicago.  
H. C. Quest, Heath & Milligan Mfg. Company, Chicago.  
Richard H. Gardner, Niles Mfg. Company, Chicago.  
Evans Nelson, Lawson Mfg. Company, Chicago.  
James Fentress, Jr., and C. C. Kelley, Cleveland Foundry Company, Cleveland and Chicago.  
R. H. Stevens, Pittsburgh Plate Glass Company, Pittsburgh, Pa., and Patton Paint Company, Milwaukee, Wis.  
P. E. Du Charme, Illinois Roofing & Supply Company, Chicago.  
C. A. Woolley, Cole Mfg. Company, Chicago.  
George H. Bullock, Wadsworth-Howland Company, Chicago.  
Charles Smith and John V. Patten, Charles Smith Company, Chicago.  
Daniel Stern and S. P. Johnston, American Artisan.  
A. A. Norton, Stoves and Hardware and Iron and Steel.  
H. H. Roberts, Geo. W. Cope and James T. Newell, *The Iron Age* and *The Metal Worker*.

## REQUEST FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

Wadsworth, Howland & Co. of Boston, Mass., manufacturers of Paints, Colors, Varnishes and Artists' Materials, have added a line of General Hardware to their Back Bay store, at 216 and 218 Clarendon street. They will be pleased to receive price-lists and quotations from manufacturers.



## DEATH OF JOHN B. VARICK.

**J**OHN B. VARICK, an announcement of whose death was made in our last issue, died at his home in Manchester, N. H., February 8, of enlargement of the heart, after a severe illness of six months.

Mr. Varick was born in Poughkeepsie, N. Y., January 29, 1833, being a descendent of an old Dutch family which was identified with the early history of New York. One of its members, Col. Richard Varick, was private secretary to General Washington, and afterward the forty-fourth Mayor of New York, officiating from 1789 to 1801, consecutively, much longer than any of his successors.

John B. Varick went to Manchester in 1849, starting in business as a clerk and rising to the proud position of one of New Hampshire's foremost merchants.

Mr. Varick's first employment was with his cousin, John P. Adriance, who was in the Hardware business in Manchester. Two years later Mr. Adriance disposed of his interest to Messrs. Varick and Dennis and then in 1855 Mr. Dennis withdrew from the partnership, the firm becoming Varick, Storm & Co. This was followed



JOHN B. VARICK.

by another change three years later, when Mr. Storm retired and was succeeded by Varick & Co. In 1860 Mr. Varick purchased his partner's interest, and from that time forward he was practically the sole owner of the establishment which bore his name.

Mr. Varick's resource and enterprise were well illustrated in 1892, when his retail store was totally destroyed by fire. In four days a temporary structure, 192 x 32 feet in ground dimensions, was built on the vacant lot west of the City Hall, and in three weeks the John B. Varick Company were transacting business there with a full line of goods.

He traveled much and had made as many as 15 trips to Great Britain or the Continent, and was one of the survivors of the Oregon liner wrecked on the coast of Long Island in the 80s, bound to New York.

At his desk he was a hard worker, although in more recent years a considerable portion of the care of the business was assumed by one of his sons, who possesses in large degree the enthusiasm and progressiveness of his successful parent, but up to the last Mr. Varick's was the master mind of the business. He knew well how to surround himself with able men, and how to encourage them and obtain the best results.

Mr. Varick also found time to take an interest in other enterprises. He was president of the People's Gas Light Company, a director and auditor of the New Hampshire Fire Insurance Company, director of the

Amoskeag Bank, and trustee of the People's Savings Bank. He was a member of the Masonic fraternity, belonged to the Derryfield Club, was a member of the Order of Cincinnati in New York State and belonged to New York's Holland Society.

Mr. Varick established a lasting reputation for honesty, enterprise, integrity and reliability, and the business he created and left is a monument in itself. He is survived by a widow and three sons, one of whom, by his first wife, being Thomas Rice Varick, treasurer of the Varick Company, another brother, Richard Varick, dividing his time of late years between Berlin, Germany, and this country, while his youngest son is still a student.

## TRADE ITEMS.

THE retail Hardware dealers of East St. Louis, Ill., organized a local association on the 3d inst. All the dealers of that city are members of the association. The officers are as follows: President, Charles Maurer; vice-president, William Goedde; treasurer, Fred Glesing; secretary, George G. Barbour.

THE UNITED STATES COMPANY, Park Row Building, New York, have opened a branch house at 215 Lake street, Chicago, which will be under the management of C. McWilliam, an experienced Hardware salesman. Mr. McWilliam was connected with Hibbard, Spencer, Bartlett & Co. for five years and with Farwell, Ozmun, Kirk & Co. for the past seven years. The company have entered the Hardware jobbing field on a new plan, as recently explained in these columns.

THE ROBESON CUTLERY COMPANY, Rochester, N. Y., manufacturers of Razors, Scissors, Knives, Carvers and Shears, as well as Razor Strops and Cutlery Specialties, have prepared for distribution to the trade several mailing cards and circulars setting forth the merits of their goods. The circulars, variously worded, name some specific time when their advent will be followed up by a call from one of their salesmen. What is claimed by the company for a system they have adopted is that the dealer's stock will be complete and systematically arranged, that goods cannot become mixed and that there is no waste.

HOUGH CASH RECORDER COMPANY, Indian Orchard, Mass., are manufacturing the Security Cash Recorder, which is already in use in many Hardware stores. In a pamphlet issued by the concern they refer to the autographic cash system as the only correct system in existence which gives a permanent detailed record. The Security, they state, compels the salesman to make a record before he can open the drawer. It will not work if he forgets to do so. These machines are made attractively in 17 different styles.

E. O. BURTON is now connected with Clinton Wire Cloth Company, Clinton, Mass., as one of their traveling representatives.

E. C. ATKINS & Co., Indianapolis, Ind., and 64 Reade street, New York, have gotten out a large window or sample room sign designed to advertise their Perfection and Pennsylvania Rex Cross Cut Saws for cutting heavy timber. It is made of heavy pasteboard, about 3-16 inch thick, in easel form to stand alone, and represents a typical woodsman resting partly against a log just cut, the figure of the man being cut out and the various parts in natural color. The device is about 5 x 3 feet, extreme dimensions, and is crated for shipment, there being one each to represent the two different styles of Saw. These signs are sent gratis to the best trade handling this class of Saws.

C. T. STORK, New York manager of the Columbian Hardware Company, has just returned from the annual meeting, held at Cleveland, Ohio. The old Board of Directors was re-elected and a very satisfactory report for the year submitted. Certain additions to buildings were decided upon, as well as a number of new lines, which will be completed and soon placed upon the market. After the shareholders' and directors' meetings were held all shareholders were invited to a dinner at the Euclid Club.

## North Dakota Retail Hardware Association.

**T**HE fifth annual meeting of the North Dakota Retail Hardware Association is now in session in Fargo, N. D. The convention will occupy two days, February 19 and 20. During the convention the papers given on the following pages will be read. It will be observed that they relate to a number of topics of practical interest to Hardwaremen.

### Some Difficulties Hardware Dealers Have to Contend With.

BY H. F. EMERY, FARGO, N. D.

Some years ago a young man came West, seeking a business location. He decided to engage in the Hardware trade in North Dakota. Having procured a suitable building, the first question is: Of whom, and where, am I to buy my stock? The saint and his sister lay their goods at his feet. A little further northeast, the city where "lake and rails meet," is ready and willing to help. The "Windy City" puts on her best clothes, and with a pocket full of "equalization of freight,"



H. F. EMERY.

comes to him with outstretched arms, and to the south he sees the city on the Mississippi making "goo-goo" eyes and offering the largest catalogue in the world, and in the background loom up manufacturing agents and specialty men with their low prices. He dismisses them all, and going down the street, finds a life long friend, an old Hardware dealer, and to him he makes known some of the difficulties he has to contend with right on the start.

#### GOODS NOT TO BUY.

This friend first takes him to a department store, where is to be seen Hardware of various makes and descriptions. He bids him look close and see if he can find a — Tea Kettle, a — Hammer, a — Lawn Mower, a — Knife, or perchance a — File, and while he is thus engaged the friend whispers "of the goods that you find here pass up when you buy, not with a hateful feeling, but as a business proposition." He then goes with this friend to his private den, and there, spread out on his desk, are quantities of catalogues. Some marked M. G. W. & Co., Chicago; some T. M. R. & Co.'s Supply House, Minneapolis, while others are simply marked Hardware. They go through the first two catalogues, and the young man is told to

look sharp, and such makers' names as appear on the cuts, them also is he to pass up, yea, even those that have fictitious names, but show ear marks of well-known manufacturing companies, they too must be ignored, for of such are the enemies to the legitimate Hardware trade composed.

He is then taken to a high hill, and on the left, in the valley below, sees waste and desolation. "These," says his friend, "are those who, in the beginning, bought of any one, and every one, and when trouble came there was no one to hear their cry, and the sheriff came and the place thereof knew them no more. These on the right hand are those who had nothing to do with the manufacturing companies who solicit trade of the retailer in good times, and keep out of the State when short crops are in order, who bought from but few jobbers, and when trouble overtook them, these self-same jobbers stretched forth their hands, saying, each with a loud voice, which was even heard in the manufacturing camps: 'Your accounts are extended for one year,' and it was even so, and the next year an abundant crop was harvested and the dealers prospered."

And the young man said, "It is enough," and went at once to a good jobbing house, giving them a full account of his property, keeping back nothing; and they extended to him a large line of credit, even a larger credit than he had expected, for they saw in him an upright man. The stock arrives, and in due time the doors swing open to the world's trade.

#### HARD QUESTIONS.

Difficulties confront him on every hand. How to make a Hardware store pay without a tin shop; how to keep the shop from losing during the long cold and quiet winter months. These are questions hard to answer. He decides to have a good tinner; one bright and up to date. This man to be made right hand man; to help wait on trade as well as make Stove Pipe, and our young dealer finds he can dispense with his high priced clerk and use a helper. Thus is the shop a help to the store and not a drag in the winter.

Later on the credit question is a hard one to solve. Believing his competitor to be a human being he goes to him to talk the matter over, and to his surprise finds him puzzling over the same trouble. The conclusion is soon reached that if the trouble is as one, why not be as one, and rid the books of the dead beat element. Lists are made out and exchanged and the slow and doubtful would-be customer is told to move on.

#### INSANE COMPETITION.

The years go by. Invoicing time comes again and again, and each year shows an increase of business over the preceding one, but what is his astonishment to find that, in spite of his best efforts, his bank balance does not grow in proportion to the growth of the business. Again he seeks his old friend. "My son," says the sage, "competition is your trouble. The department store, the catalogue houses, lumber yards handling Hardware, independent tin shops, cornice shops handling Furnaces, drug stores selling Cutlery, all of these tend to cut your profits down, but the one who ought to stand by you, and help shoulder to shoulder to fight the above competition, is your worst enemy in trade. This man is your competitive Hardware dealer in your own town. He it is that watches you with a jealous eye and puts the knife in deep, though the same thrust reacts and cripples him; and while you are figuring out a way to increase your profits you will find he is trying to solve the same problem."

Gentlemen of the North Dakota Hardware Dealers' Association: After many years of labor in the Hardware trade I am convinced that the greatest drawback to the retail business is this insane competition among dealers in their own city. From that cause bad accounts are made, long time contracts entered into and narrow margins cut still narrower.



### The Practical Hardwareman.

BY LEVI B. HANSON, SHELDON, N. DAK.

The royal road to success in the Hardware business is practically that the Hardware merchant must be a specialist in the business. In this age of specialties and specialists it is absolutely necessary that the Hardware merchant should be a Hardware specialist.

#### HARDWARE BUSINESS A SPECIALTY.

Our doctors are nearly all specialists in some line, our best lawyers are specialists, and so with every business. Our Hardware drummers are experts in their line, and in order to economically purchase goods from them one must thoroughly know his business. Not wishing to cast insinuations upon the merry Knights of the Grip, they are simply scientifically doing their duty. The idea is, know what you want and where you can purchase the cheapest. Be in position to take advantage of all prevailing competition. Make the business a specialty as well as having specialties in the business.

#### PITCHFORK STORES.

First of all is order, which is Heaven's first law. We see so many stores that might be called pitchfork



LEVI B. HANSON.

stores. They represent the appearance of having been arranged with a pitchfork, as the cases were open and the goods shown on the shelves in a topsy-turvy manner, causing a loss of valuable time hunting for the articles you possibly cannot find.

Every person is possessed of more or less admiration for a neat and orderly store, where there is a place for everything and everything in its place, instead of shelves representing a conglomeration of Hardware. This, I believe, to be one of the strongest pulls on trade, making people feel at home in your store. This, together with fair treatment and cheerful greetings from yourself and clerks, will establish your trade.

#### AS TO QUALITY OF GOODS

to be handled, the best is none too good, especially in Tinware. If a farmer's wife buys a cheap Tin Pail and finds holes rusted in it after the first week's wear, the probabilities are that she will tell her neighbor's wife about it. She will not consider the small price she paid for it, but will likely buy her Tinware elsewhere in the future.

#### ADVERTISE YOUR BUSINESS.

though this is a business itself, but a thriving merchant knows how to advertise. Every advertisement should represent the best the firm have to offer. Write something attractive. Something that will make people talk about you, for such is good advertising. Never advertise an article at a special bargain unless you have legitimate cause for doing so. Let it prove to be as represented, as any advertising to bring permanent

success must be honest. In this country, where the credit system prevails, one must know whom he extends credit to. There is no country on earth that is not composed of two classes of people, and in nearly every case the bad one separated from the good in a little community within that community, for birds of a feather will flock together.

#### THE MATTER OF CREDIT.

You will always find a section of your community where you draw a dead line for credit. But though you have refused them credit, they are entitled to the same courtesy and fair treatment as your debtor of \$1000, who pays his account when due. His cash trade will invariably be given to you in preference to the man who trusts him, because he is under no obligation to you, he owes you nothing. To successfully conduct a credit business one must be a judge of human nature and a good collector. He must know the different ways of approaching a debtor according to his temperament.

He should know whether the indebtedness of a particular individual should be requested or demanded. If you exercise careful and deliberate judgment in the selection of your credit customers, a kindly request is sufficient. But, do your best, some undesirable person will become a blot upon your books. Such accounts as these should be taken off the book and put in good paper. If about November 1 you are in doubt as to the possible payment of such account, get security as early as possible and carry him another year rather than postponing settlement on the prospect of a good promise until January 1. Then if you get any security it will be only second to that held by some banking institution.

#### PROFIT AND EXPENSE.

In the mechanical business there are two contending elements. One is profit and the other expense. There is a continual race between the two for supremacy. If expense travels at a 2.10 gait and profit at a rate of 2.40, it stands to reason that you are losing money, or if your expense amount to 20 per cent. of your gross sales your business cannot exist at a profit of 15 per cent. on gross sales, but if conditions are reversed the business will prosper. This means that the merchant must have intelligent and practical knowledge, proper control of profit and expense of the business. Careful and intelligent bookkeeping should determine at least monthly what per cent. the expense bears to the sales, without waiting for his annual inventory, thereby at all times knowing at what percentage of profits his business can prosper.

#### DISCOUNTS TO FAVORED ONES.

There are a thousand different ways of swelling your expense account. One of these may be termed the unknown quantity. It is the discounts to favored ones. I refer to discounts given to various individuals, as, for instance, to preachers and other members of the favored fraternity.

This sort of a drain upon the profits of the business is dangerous, because it cannot be kept track of. Furthermore, I do not understand why the well fed and well paid preacher should have a 10 per cent. discount, when the hard working man with the hoe, who digs in drudgery, is made to pay full price. Mark your goods at a reasonable profit and sell to all alike; give discounts to neither preacher, proprietor, saint nor sinner.

In conclusion I would say that in this age of flashing thought, lightning action and figures, it stands one in hand not to guess at, but know his business.

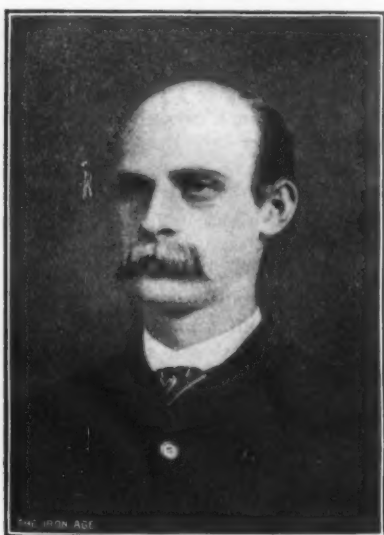
#### One Way to Compete with Supply Houses.

BY O. A. GALLUP, EDGELEY, N. D.

This simply stated would be, keep the goods and keep them in good order, always at hand, always a full stock, and an everlasting perseverance in everything pertaining to business. I will not undertake to make my paper apply to the larger stores of our State, but more particularly to the stocks of the smaller towns.

## A FULL STOCK

is not necessarily everything that is made or used, but should contain such goods that there is a demand for within our territory. A full stock need not mean a big stock. If our trade is light we had better make our purchases in small lots, but at all events always have some of each kind and style on hand. We can order often, and by keeping the stock in good order we should never need be out of any article for more than a day or two at a time. When we have a call for some article that we do not have in stock, and we offer to send and get it for our customer, do we not generally get this reply, "I can send for it myself as well as to have you do it for me?" And usually several other articles are included in the order. Therefore would it not be more profitable, even if our trade is light, to keep at least one article each of everything that is likely to be called for, though we may think that we are likely to carry it in stock for several years before finding a sale for it? I have practiced this and find it profitable to do so. I realize that it is hard to keep track of a stock made up of small articles, and but a few of each kind, but diligence will overcome this trouble, and so long as there



O. A. GALLUP.

is profit in our work we can afford to attend to it thoroughly.

## FIXTURES FOR ACCOMMODATION AND DISPLAY.

When we visit one of the city Hardware stores we find it supplied with everything that is convenient for displaying and selling goods. It has for the shelf goods boxes for each separate kind and size of article. With them it only requires an instant to obtain the article wanted, and also it only requires a glance to tell what goods are needed to replenish stock. With the use of these fixtures one can attend to several customers at one time if necessary. Now, if these conveniences are profitable for the larger stores, are they not also profitable for the smaller stocks? I say from experience decidedly yes.

## SHELF BOXES.

I would like to have every dealer provide himself with shelf boxes of some kind, and I am sure he will better please his trade. He can carry a more complete stock, requiring less space, less capital, less help, and consequently will make a greater profit.

The elaborate and expensive boxes are not necessary; I prefer the less expensive ones for a small stock. They require less space and often are more convenient. Such as I have I made myself during the dull winter months, using lumber from packing boxes for front and back, the sides and bottom being made of sheet iron. The front is finished in natural color, and a picture taken from a catalogue and pasted onto it and varnished illustrates the contents of the box. This matter of

boxes and other neat contrivances may not interest many of you, and it may appear like wandering away from my subject. However, I believe it is a great factor in getting and holding trade, and if we can sell more goods by using these conveniences we have succeeded to this extent in gaining on our supply house competitor.

## QUESTIONS FOR REFLECTION.

May I ask if our customers are altogether to blame for sending away for their goods, when they are in many cases unable to procure them at the village store or if they have cause to be disgusted with the untidy stock and unbusinesslike methods of its proprietor? May not some of us exact too much profit? Are we always worthy of our patrons' confidence? I fear that too many of us are somewhat at fault along these lines. If so, let all strive to improve, let us do our part and do it well; then we can expect our State and National associations to successfully assist us in any reasonable complaint.

I have had direct benefit from our association and I feel certain that much good has been done. Let us all then give our association loyal support and liberal financial aid.

## Dealers' Associations, Their Object and What They May Accomplish.

BY JAMES MCPHAIL, LANGDON, N. D.

The association of persons engaged in the same occupation, trade or line of business is not new; and that very material benefits may be secured to the occupation, trade, or line of business by such association of those engaged in it has been amply demonstrated.

The object of those associations should be, in every honorable and legitimate way to promote the welfare of the individuals engaged in the business the association represents and also the interests of that particular line of business.

## HARMONY.

To accomplish this, perfect harmony must exist among the members of the association—they must determine what their wants are, what conditions exist that are injurious to their business, why they exist, and the means or method of changing the conditions, so as to overcome or suppress the objectionable condition.

## DOUBTFUL REMEDIES.

I believe that the greatest care should be exercised in looking well into cause and effect in all such cases, as I have frequently found that conditions which on first sight may seem injurious to a line of business are not always what they seem, and often the remedies proposed, if applied, would cause more injury than the existing conditions. For this reason the discussion and exchange of opinions which can be had at such meetings as dealers' associations are of great benefit.

We, by discussion, are enabled to view the situation from many sides and under various lights, also to analyze the proposed remedies, and, if possible, find if they contain anything which may produce a different effect from that desired.

I have frequently thought that we devote far too much time in association meetings to discussion of supposed or actual evils of very little importance, and which each individual could and must fight in his own particular way; and lose sight of much more important questions or conditions which can only be successfully handled by association, and united effort.

It is an indisputable fact that "in unity there is strength," and the strength of the association should not be carelessly or wastefully used in unimportant matters.

## CHANGING CONDITIONS.

The present time is one of very rapid development. Business methods of to-day call for quick and decisive action, and what probably was a good system or method some years ago may now be very much behind the times. As I said, the present is a rapid time. Yet we have every reason to believe that the near future, with the perfection of various scientific and mechanical inventions which are being tested will materially affect



methods of manufacture, transportation and communication. The various existing and proposed combinations of capital will materially affect labor and require a change of occupation by many persons. Those conditions will require active and careful consideration that they may be taken advantage of, and made to contribute to the general welfare, as it is a recognized fact that unemployed energy of any kind, be it capital, labor, or material, is a menace at least to its correlative industries or associates, if not to business and society at large.

#### UNSATISFACTORY RAILROAD TRANSPORTATION.

But, gentlemen, to come down to the questions which should and will likely occupy your attention at this present meeting, there is one in particular which to me seems very much in need of attention—that is, the railroad transportation question, which may be summed up under the following—viz.: Rates charged you for transportation of your goods from the trade centers to the points of distribution to the consumer, the unreasonable classification of those goods, the arbitrary and unbusinesslike methods which you are required to take to secure a return of charges unjustly collected, or compensation for goods damaged in transportation, and on many lines of road (situated within the territory covered by your association), the very insufficient train and car service, which causes delay in delivery of goods, and frequently greatly reduces the value of the produce of your customers, to whom you supply goods, thereby reducing their power of purchase and your profits.

To myself, personally, these are sources of much more annoyance than catalogue houses, jobbers' profits, or general store competition, and I believe your association could well devote some time to a study of this question, and the adoption of methods to improve the existing conditions. Permit me to suggest that your association, by associating with the Implement Dealers' Association, could well afford to pay a competent man a liberal salary, to look after this particular part of your business.

Of course, if you are in the habit of paying your freight and express bills as rendered, without investigating the correctness of the weights for which you are charged, the rate or classification which the railroads have charged you, you may not be aware of the amount of your "earthly treasure" which the "philanthropic magnate" who controls your transportation facilities has quietly despoiled you of.

Personal experience has caused me to know the uselessness of appointing a committee to look after such matters. A committee can't and won't do it.

Hoping that this meeting may be a benefit to our business interests and a social pleasure to all who attend, I thank you for your attention.

#### LOGAN-GREGG HARDWARE COMPANY.

**L**OGAN-GREGG HARDWARE COMPANY, Pittsburgh, Pa., publish in their *Hardware Hints* for January a sketch of the 70 years' history of the business. This is embellished by a large number of half tone engravings showing the building in which they began in 1831, a later store occupied for 42 years, and their present fine edifice at 125-131 Seventh street. The style of the concern, which originally was Logan & Kennedy, has been successively Logan, Wilson & Co., Logan & Gregg, Logan, Gregg & Co., and as at present Logan-Gregg Hardware Company. There are also a large number of well executed portraits of the founders of the business, the present officials, traveling salesmen and heads of departments, together with a view of the entire force at the seventieth annual dinner at the close of the year's inventory. The company are to be congratulated on their 70 years' successful business and their position in the trade, which are so appropriately chronicled in this interesting publication.

JAMES D. FLEMING, who until recently acted as manager in charge of the Chicago branch of the Lalance & Grosjean Mfg. Company, New York, was elected treasurer of the company at the annual meeting February 13, and will hereafter be in charge of that department at headquarters, 19 Cliff street, New York.

#### PRICE-LISTS, CIRCULARS, &c.

**STEWART & ROMAINE MFG. COMPANY**, Philadelphia, Pa.: Single and Double Expansion Bolts. Among new goods shown in the company's 1902 catalogue are Steel and Iron Anchor or Toggle Bolts, Expansion Bolts for electrical and pipe hanging purposes, also an increased number of styles of Cap and Bonnet Nuts.

**THE MCCRAY REFRIGERATOR COMPANY**, Kendallville, Ind.: Catalogue of the McCray line of Refrigerators. This is an exceptionally handsome catalogue of 60 pages, having a specially fine class of illustrations. Some of these illustrations are lithographed in colors to show the uses to which the different compartments can be put. The line comprises Refrigerators made wholly of porcelain tiles, others with linings of white glazed tiles and others lined with odorless wood. The illustrations show a large number of styles of all sizes, together with illustrations and descriptions of special Refrigerators, which are built to order. In some cases the Refrigerators built to order have two ice chambers, thus making two distinct Refrigerators in one. The company make a specialty of constructions to meet the most exacting hygienic requirements.

**THE NORTHERN REFRIGERATOR COMPANY**, Grand Rapids, Mich.: Catalogue of Glacier and Defender Refrigerators. This catalogue comprises 96 pages, and illustrates a large variety of Refrigerators comprising all kinds of constructions suitable for domestic use, as well as special shapes for those requiring Refrigerators of large capacity or of narrow width for apartment house use, grocers', butchers' and butter merchants' Refrigerators, sideboard styles, &c. Features have been introduced in some of these constructions which are of a specially interesting character. For instance, the butchers' Refrigerator has drawers for cut meat, fitted with bottoms made of heavy galvanized wire screens; grocers' Refrigerators have roll tops made of double glass for the storage of small cheese and other articles, and the butter Refrigerators have sliding trays to enable the contents to be easily drawn out. These Refrigerators are both zinc and porcelain lined. A portion of the catalogue is devoted to illustrations and descriptions of the construction of the flues to secure air circulation and other details of fixtures, trap, &c.

**IVER JOHNSON'S ARMS & CYCLE WORKS**, Fitchburg, Mass.: Twenty-page illustrated catalogue of their Bicycles, including Roadster, Racer, Road Racer, Truss Frame Racer and Road Racer, and special light Roadster, together with a line of cushion frame Bicycles for men and women.

**THE COBURN TROLLEY TRACK MFG. COMPANY**, Holyoke, Mass.: Illustrated catalogue for 1902 of their Door Hangers, Round Trough Trolley Tracks and Fire door Fittings in great variety for almost every purpose.

**FARWELL, OZMUN, KIRK & Co.**, St. Paul, Minn.: Booklet, illustrated catalogue, envelope size, of the Crawford Bicycles, for which they have been the sole distributors in the Northwest for nine years.

**E. C. ATKINS & Co.**, Indianapolis, Ind., and 64 Reade street, New York: An advertising novelty, which is very ingeniously arranged. By pulling out a strip of cardboard at the bottom of a paneled packet  $5\frac{1}{2} \times 3\frac{3}{8}$  inches square, on which is an illustration of a Hand Saw, a Whip Saw working vertically is made to appear to cut in two a large log without any visible changing of the two cloth printed scenes shown through an opening  $1\frac{1}{4}$  inches square. The first picture is of an uncut log in a frame which the descending Saw cuts in two without it being apparent how it is done. On the back is a calendar of the year.

**THE STANDARD TOOL COMPANY**, Cleveland, Ohio, and 94 Reade street, New York: Illustrated booklet catalogue of eight pages describing their various Drills, Reamers, Taps, Cutters, &c., in Spanish.

**A. TREDWAY & SONS HARDWARE COMPANY**, Dubuque, Iowa: Spring Circular No. 30. This contains 120 pages devoted to illustrations, descriptions and prices of spring and summer goods.

## New England Hardware Dealers' Association.

**T**HE New England Hardware Dealers' Association held their ninth annual meeting and election of officers at the Quincy House, Boston, February 12. At 5.30 p.m. dinner was served, followed by the election and remarks by a number of members upon "The Outlook of the Association." Owing to illness George W. Burditt was not able to be present and Vice-President Sewall D. Balkam presided. The following resolution was presented by Charles E. Adams and unanimously adopted, expressing the sympathy of the association for President George W. Burditt in his illness:

*Resolved*, That the members of the New England Hardware Dealers' Association send their warm sympathy to President George W. Burditt during his temporary illness, and express their kindest wishes that he may soon resume his business duties, also join us at our meetings fully restored to his accustomed health.

The report of the treasurer, Henry N. Sanders, showed the finances of the association to be in good condition. Secretary James A. Farless for the ninth



SEWALL D. BALKAM, President.

time presented his annual report, which in part is as follows:

### Secretary's Report.

I consider it a great privilege to offer to the New England Hardware Dealers' Association my ninth annual report as its secretary. It is with much pleasure that I have to say that the association is in a prosperous condition. Our membership is virtually the same as at the last annual meeting, and by a little exertion on our part our membership can and should be increased to its former record.

During the past season we have had eight monthly meetings and seven Executive Committee meetings. At the annual meeting last February the following officers and directors were chosen, viz.:

President, Geo. W. Burditt, Cambridge, Mass.  
First vice-president, Sewall D. Balkam, Jamaica Plain.  
Second vice-president, M. A. Chandler, Boston, Mass.  
Third vice-president, E. C. W. Bliss, Boston, Mass.  
Secretary, Jas. A. Farless, Boston, Mass.  
Treasurer, Henry M. Sanders, Boston, Mass.  
Directors: D. Fletcher Barber, Boston; H. L. Sawyer, South Framingham; John B. Hunter, Boston; John M. Fiske, Natick; Elihu F. Turner, Boston; John H. Robinson, Hudson; John Duncan, Boston.

After the election, as above, Samuel A. Bigelow of Bigelow & Dowse Company, addressed the association upon "The Outlook of the Hardware Trade." His remarks were well appreciated.

At the March meeting the Pricing Committee was elected, as follows: John B. Hunter, Boston, chairman; Calvin M. Nichols, Dorchester; Henry M. Sanders, Boston; James P. Mackay, Brookline. Also the Investigating Committee, as follows: D. Fletcher Barber, chairman, Boston; William E. Plumer, Somerville; William D. Parlin, Natick. D. Fletcher Barber was elected as auditor. The subject of discussion was, "How Should a Traveling Salesman be Treated?"

Professor Floyd entertained the company with some

pleasing tricks of sleight of hand. Robert L. Buskirk favored the company with some fine solos.

At the April meeting a set of resolutions relative to the demise of our late brother, James W. Vinal, was offered by D. Fletcher Barber. W. R. Chester made an address relative to the lumber business, and Charles E. Adams of Lowell spoke of the usefulness of "Commercial Bodies" and the duties of individuals toward them. Both speakers were well received.

At the May meeting the amendment to the by-laws, article 8, as offered by S. D. Balkam at the April meeting, was passed; also the amendment to article 12, as offered at the last meeting by D. Fletcher Barber, was carried.

M. A. Chandler was elected a delegate to the Massachusetts State Board of Trade for three years from May 8.

At the September meeting J. W. Calderwood, Boston, favored the association with some fine solos. Our associate member, Charles E. Adams, spoke upon his trip abroad; he was exceedingly interesting.

At the October meeting the Mayor, Thomas N. Hart, was our guest, as also James N. Frye, George S. Saunders, Charles A. Burditt and Daniel Goodnow, all of Boston; the first three are still in the Hardware business and addressed the association. The music was furnished by the Trombone Quartette from the Lynn Cadet Band.

At the November meeting Samuel L. Powers of Newton, representing the Eleventh District of Massachusetts in Congress, was our guest. He made an inspiring address upon the topic, "The Typical American." Mr. Calderwood furnished us with vocal solos.

At the December meeting the ninth ladies' night took place. Our guests were Lieutenant-Governor John L. Bates of Boston; Mrs. Katherine Lente Stevenson of Newton, president of the Massachusetts W. C. T. U., and Rev. George R. Grose of Newton. All the above made addresses, likewise S. D. Balkam, Chas. E. Adams and others. Charles E. Adams of Lowell was unanimously elected to represent our association in the Massachusetts State Board of Trade for three years from the 11th inst. The entertainment was a great success, but it can be improved upon. The Ladies' Schubert Orchestra furnished the music. A committee was appointed to report at the annual meeting a list of officers, excepting the president. I am happy to state that our esteemed President Burditt is improving from his illness of the past two months and is in hopes soon to be about again.

### Charles E. Adams' Remarks.

Charles E. Adams, delegate to the Massachusetts State Board of Trade, a body composed of representatives of 41 trade organizations of the State, spoke of its success in influencing trade legislation by the united and intelligent presentation of the wants of the trades to legislative bodies, both State and national, and emphasized the importance of the New England Hardware Dealers' Association growing in numbers and strength.

### Election of Officers.

The Nominating Committee comprising Samuel H. Thompson, Lowell, Mass.; Edward A. Loomis, Providence, R. I.; William D. Parlin, Natick, Mass., reported as follows:

First vice-president, John H. Sayward, Haverhill, Mass.  
Second vice-president, John B. Hunter, Boston, Mass.  
Third vice-president, E. Loring Richards, Boston, Mass.  
Secretary, James A. Farless, Boston.  
Treasurer, Henry M. Sanders, Boston.

DIRECTORS: D. Fletcher Barber, Boston, Mass.; Charles E. Adams, Lowell, Mass.; John M. Fiske, Natick, Mass.; E. C. W. Bliss, Boston, Mass.; Calvin M. Nichols, Dorchester, Mass.; Joseph H. Williams, Boston, Mass.

All of whom were unanimously elected for the next year.

For president, Samuel H. Thompson of Lowell presented the name of Sewall D. Balkam of Jamaica Plain. There was no other nomination and Mr. Balkam was unanimously elected. In accepting the election, President Balkam spoke as follows:

### President Balkam's Address.

Let me assure you that the honor just conferred upon me is very highly appreciated, and, in accepting it, I fully realize the importance of the responsibility, feeling that our association has come to the time when the word must be forward, if we are to continue. You have



elected an Executive Committee, of which I am but a member, who are equal to the occasion, and on that committee will be placed the entire responsibility, success or failure. This association or any other will never run itself except into the ground. We must have hearty co-operation of all. Large committees of dead wood are but a burden, and it is my desire to-night that any man appointed who feels there is nothing for him to do resign at our next meeting. I propose to do what is in my power toward an improvement in membership and interest, and shall expect the same effort on the part of our Executive Committee and each member. If this cannot be done my term of office will be brief.

#### THE OBJECTS OF THE ASSOCIATION

are many. Some have simply come for a good dinner, leaving at once for entertainment outside. Such members are of no value to the association, as it costs all they pay to carry them. Others come for various kinds of entertainment, which is not altogether profitable. Some for business only, but this is not always desirable. It appears to me that the most valuable feature has been the bringing before us by able speakers of topics of the day important to all, many of which the ordinary Hardwareman has not the time to become fa-



JAMES A. FARLESS, Secretary.

miliar with. Another feature to my mind of great value is the good fellowship, coming close together and realizing that we are men in a true sense. I wish also just to refer to the great value of organization which has been so ably referred to by Mr. Adams.

#### POWER IN ORGANIZATION.

There is power in organization, and back of it remains stagnation to nearly every enterprise. We have seen and felt the most of it in my section of the city. With no important society or other organization for the public good, what have we received? Nothing, when our neighbors in Dorchester have had at least a dozen of various forms. The result has been thousands of dollars for them, practically nothing for us. So let us broaden out and feel that though we may not get money value in return we are doing something for the good of all. As stated by one of my neighbors recently in an address at Buffalo, the success of the business man or any man before the public is not measured by the amount of business done or the amount of money accumulated, but by the good done and the uplift given to those on every side. So let us broaden our vision and touch our neighbors for good, bring out competition to this association for our mutual advantage.

#### "The Outlook of the Association."

Speaking on the question of the evening, which was "The Outlook of the Association," remarks were made by the following members in an earnest and encouraging vein, which, if carried into action, assures the association a most successful year. Those who spoke were

Anthony S. Morss, James A. Farless, Edward A. Loomis Myron H. Tarbox, D. Fletcher Barber, E. W. Bliss, Calvin M. Nichols and E. M. Richardson.

#### Remarks by James A. Farless.

The genial secretary of the association, James A. Farless, was the recipient of numerous congratulations upon the attainment of the seventy-fifth anniversary of his birth, which was reached the day of the annual meeting, and in return made an interesting talk, in which he gave the members his receipt for a long life and a happy one. Mr. Farless has attended every meeting, both committee and regular, of the association, with but one exception, since its organization in 1893.

The president appointed E. Loring Richards and George J. Mulhall a committee for the March meeting.

#### R. D. CONE COMPANY'S CATALOGUE.

R. D. CONE COMPANY of Winona, Minn., have just issued a catalogue for general distribution among their customers. The book contains 1235 pages, of a fine quality of book paper, bound in buckram board covers and profusely illustrated. The subject matter is divided into ten general departments, as follows:

	Pages.
Department A—Builders' Hardware.....	3 to 320
Department B—Mechanics' Tools.....	321 to 531
Department C—Farm Tools and Utensils.....	532 to 675
Department D—Blacksmiths' Tools and Supplies.....	676 to 815
Department E—Paints and Painters' Supplies.....	816 to 836
Department F—Household Goods, &c.....	837 to 978
Department G—Sporting Goods, &c.....	979 to 1049
Department H—Cutlery and Silver Ware.....	1050 to 1118
Department I—Household Wares.....	1119 to 1180
Department J—Tinnery's Tools and Supplies.....	1181 to 1235

In addition to the department index is an alphabetical index of 33 pages, covering some 6500 items. An initial colored page is inserted at the beginning of the various departments, upon which each department is comprehensively indexed. This is an innovation with which the company are especially pleased. At the back of the catalogue, ten pages are devoted to freight classification of articles in the Hardware line. The catalogue is to be kept up to date by the publication of new lists as they may be adopted by manufacturers from time to time, and by slips or pasters illustrating new goods as they may be added to stock. The company are to be complimented upon the enterprise shown in compiling so complete a catalogue, as well as upon the arrangement and general character of the book.

#### WILLIAM H. COLE'S PACIFIC TRIP.

WILLIAM H. COLE of the firm of Tower & Lyon, 95 Chambers street, New York, has just returned from a trip to the Pacific Coast, begun December 30. One of the phases of the trade beyond the Rockies that impressed him was the discrimination by the railroads through the medium of carload and less than carload freight rates which operates in favor of the large wholesalers, but against any trade that gets supplies in less than carloads. Goods in less than carload lots are hauled through a town in cars carrying mixed consignments to some coast terminal, and then hauled back, the dealer paying freight for the hundreds of miles of unnecessary hauling, as well as waiting longer for his goods. This is a burning question among the class of trade that does not take large quantities at a time.

Mr. Cole stated that the trade appear to be well satisfied with last year's conditions, while the outlook is favorable for the continuation of the good conditions; the prospect indicating a much larger output during the coming year.

In San Francisco and Seattle the cities are growing so fast that there are no houses for rent, the building of new residences not having kept pace with the demand. Seattle is growing rapidly. There is always a steamer going to some port in the Orient or Alaska with large numbers of adventurers or explorers who purchase their outfit and equipment in Seattle.

Mr. Cole's trip included San Diego, Los Angeles, San Francisco, Sacramento, Portland, Tacoma, Seattle, Spokane and Butte and East from the latter point.

## Joint Meeting of the New York Hardware Jobbers' Association and the Pennsylvania Wholesale Hardware Association.

**A** JOINT MEETING of the New York Hardware Jobbers' Association and the Pennsylvania Wholesale Hardware and Supply Association was held in Wilkes-Barre, Pa., on the 13th inst. The members of the two associations were entertained by the local houses of C. Morgan's Sons, Pennsylvania Supply Company, Phelps, Straw & Co., all of Wilkes-Barre, and A. J. Roat of Kingston, Pa. The joint meeting of the two associations was arranged for by Phelps, Straw & Co., who are members of both. Previous to the joint meeting the two associations each held independent meetings in the forenoon, and at 2 o'clock assembled at the West Moreland Club for the joint meeting, at which J. M. Kemmerer of Scranton, Pa., was elected chairman and S. J. Weaver of Rochester, N. Y., and H. L. Raub, Lancaster, Pa., secretaries.

The chairman at once introduced the speakers of the occasion, J. W. Black of Syracuse, N. Y., and G. H. Bright of Reading, Pa. Mr. Black's paper was as follows:

### Paper by J. W. Black.

In preparing a paper for this meeting I feel I have taken upon myself a deep responsibility. There are many here who have had many years of experience and activity in the business we are engaged in. Were it possible to pry into the secret stores of knowledge which they possess I doubt not but that they could give us very interesting information on these lines. Inasmuch as they will not divulge their interesting past and favor us, you will have to rest content with a lesser light.

#### PREPARING FOR THE INEVITABLE.

The details of mercantile affairs as connected with the Hardware trade are very numerous; in fact as much, if not more so than in any other branch of business. There is a very meager chance for the slow going, old style business man who still insists upon wearing sandals, because his forefathers did so before him. Now, in these days of modern inventions, the days of the great Edison and Marconi, the gigantic financial operations which have been so successfully carried through by such men as Morgan, Carnegie and others, and the many prominent moneyed institutions which exist with such large and untold wealth, lead one to pause in wonder. Is it real? We are now experiencing a condition of great prosperity. This has continued through a longer period than the pessimist had predicted and extended to a date much further in the future than the extreme optimist has imagined. It is wise in the face of all this to prepare for the change which must inevitably follow. It is also the belief of the most well balanced minds that the prudent man will fortify himself for a condition which will only be in a measure a repetition of past experience. The business we represent here to-day is prosperous and will no doubt continue to be so during the year 1902. Still, we must not be surprised to see declines in the interim.

#### THE BALANCE WHEEL OF COMMERCE.

There is one important factor which enters largely into the present situation and we cannot ignore it. The gigantic consolidations of manufacturing interests, of railroads and finance have been, and are to this day, the balance wheel of commerce. We at least know from day to day that our merchandise has a value devoid of that uncertainty which we experienced previous to their formation. If the business of large corporations is so successful is there not something to be learned from them? In the opinion of the writer, the largest factor in bringing about this result is a broad minded policy. In the management of our business there are many obstacles which are continually presenting themselves for our consideration. We have the startling fact that each year our expenses are growing larger and our profits reduced in a similar proportion. I believe that inferior salesmen will prevent you from doing a successful busi-

ness. A man should be paid on the basis of what he has accomplished. He should be an educated man and of good address, and most important of all, possess good judgment.

#### COMPETITION.

You will always find competition wherever you go. Would it not be an ideal condition if we could get on without it! I fear, however, we shall continue to experience it so long as we exist in a mercantile way. Our association should by co-operation endeavor to smooth the way as much as possible. The consideration of competition is something which is of great importance at the present time. Perhaps some of you are not interested in this subject, owing to the fact that you have none. If such is the case, we think you are exceptional. We believe that the trouble comes from the jobbers themselves. The man who relies solely on the information which is given him by his traveler will often go astray, owing to the fact that this same traveler, although he is sincere in the statements which he makes, is misled by the fact that his information does not come from a reliable source. Also, he does not take sufficient time to investigate; in other words, he does not go to the bottom of it. An extremely low price which is once made to a customer simply establishes precedent for others to follow. The customer will take particular delight in giving this information to other travelers, and very soon you will find that the price on this class of goods is demoralized throughout the entire State. We should make up our minds to be a little more conservative in listening to such statements and not conclude hastily that we must meet such concessions until we have the absolute facts in the case; even then, we should question well its advisability. When we are continually selling at a ridiculously low price would it not be wise to always bear in mind that we have a fixed percentage of cost which is necessary to consider?

#### LIMITING JOBBERS' TERRITORY.

Our salary list, our general office expenses, the increase in rents, &c., are much in excess of former years. The immense detail which is a necessity in doing a large business and a successful one requires much study so that we may be able to keep our expense account within reasonable bounds. This continued strife to succeed is a strong factor in reducing the percentage of profits on our sales. If we would but be content to confine ourselves to the territory which naturally belongs to us, it would net us better results. If each and every one should figure occasionally, if not at all times, the cost and percentage of profit that a traveler makes for him, we would not hesitate to guarantee at the end of the year that he would be selling goods not only at a better profit, but he would sell less of merchandise which does not bring a profit at all. I really believe there is not a firm represented here to-day who have not customers who are unremunerative and that it does not pay them to sell.

#### FIGURING PROFITS.

We would suggest that with these accounts which are under suspicion in this respect you will figure the profit on what you have been selling them during the year 1901, and we believe after doing so you will be rather startled at the results. I will illustrate by giving you the facts in one case. A certain jobber sold to one man \$1500 of merchandise in one year. The average profit was 11 per cent. A good proportion of it was in Barbed Wire and Nails. This same firm were carrying this man's paper for \$800. What did the jobber do? He made a detailed statement of it, and told his traveler to show it to his customer. What was the result? The traveler got the largest order for shelf goods and merchandise, paying a profit, he ever received from him, and there were no Nails or Wire in it either. Gentlemen, don't give in too easy, and you will have



more money at the end of the year. Lots of people will tell you how to get rich, but they do not tell you why they didn't get rich. It is not always the man who sells the most goods who makes the most money.

The great trouble with some travelers is that they do not have enough confidence in themselves. Perhaps you will doubt this statement, but it is, nevertheless, true in some respects. They do not always realize the proper time to say "No" in reply to an unreasonable request.

#### JOBBER AND RETAILER.

We should remember that it is for our interest to treat our trade fairly and honorably. We believe they will appreciate our efforts in every case. The jobber is just as essential to the retailer as the retailer is to the jobber. What would the retailer do if he had to send to the factory for every article he purchases? It would cost him much more in the end than by getting his goods through the jobber. Many of the retailers do not seem to appreciate fully the situation in this respect. There are many instances where delays occur in shipment of merchandise which are caused by the railroad. Without consulting the jobber he simply writes a letter, "Cancel my order," and does not even stop to say "please," in many cases. Now the jobber sells his merchandise f.o.b. the cars and his liability ceases there. This is a fact which should be impressed upon the retailer. Cases of this kind are very numerous, and have been more so during the past year during the great strike, and many delays have occurred in consequence. Many retailers will also write to you and state you have charged them too much for certain articles on invoices. You may have given them the proper prices, but the other man has not. There may be enough, possibly more articles which are lower than those of the other fellow, but he does not say anything about that. This is why prices are demoralized. We keep meeting the other fellow who is low until we are selling everything on that basis. Now, is there any reason why a retailer should not take an invoice and average up the prices? Why should the jobber reduce on one thing where he is high and not advance on another where he is too low? It seems to me this would be a fair proposition.

#### CONCERTED ACTION.

A large amount of the competition comes from the manufacturer. This subject, of course, has been brought up thoroughly by the National Association and other associations as well, and it is unnecessary to speak of it here. One thing is certain, however, that the jobbers, by concerted action, can accomplish much with the manufacturer.

We should band ourselves together to accomplish the best results and lose sight of the fact that we are competitors. We are confronted with a situation which, although not new, is a serious obstacle to us in the East. Our brother Hardwaremen in the far West seem to feel they can secure much profitable business in our immediate territory only for the asking. It seems to the writer that it is like trying to make water run up hill. They sell to the retailer whom you sell; also endeavor to sell the jobber, and in many cases the consumer. I regret to say that some of our jobber friends are in the habit of assisting these same competitors by giving them an order occasionally for some product which they control, thereby helping them out on their expense account. I do not claim that we own any territory or trade. Both are open to the world. We do not want the earth, but modestly ask for a very small portion. We will be magnanimous and divide with the retailer, who is our friend, but please, Mr. Retailer, don't bear down quite so hard at times. "Live and let live." Why not? Oil the wheels and the machine will carry you over the rocky road of life, and when your time comes you will admit that the "other fellow" isn't so bad after all.

#### GIVE AND TAKE.

This paper contains nothing new to you who are present here to-day. Possibly, however, there are some little suggestions which may cause you to reflect that we are following the same path and we must turn aside

a little for each other on the way. Let give and take be our motto, and all remember it doesn't cost anything to say "by your leave," or "if you please."

In conclusion, we have many things to be thankful for. Our wares are made of iron, and iron is king. Our great and glorious country is teeming with this natural product, and all we have to do to avail ourselves of its advantages is to dig it from Mother Earth and mold it at our will. We can and will supply the world, not only with iron, but many other commodities. The broad minded policy we have pursued in our foreign relations, our treatment of the Philippine, Cuban and Chinese questions has made us the greatest nation on earth. In the love of our country and our flag we are as a unit. We drink your health to-day. To-morrow? Well, if we can't get the business any other way, I presume we'll have to cut the price.

#### Local Hardware Associations.

G. H. Bright of Reading, Pa., then read the following paper on "Local Hardware Associations:"

A short time ago I was surprised to receive a letter from Mr. Lewis, chairman of the Executive Committee of the Pennsylvania State Hardware & Supply Association, asking me to prepare a paper to be read before the joint meeting of the Pennsylvania and New York associations. Mr. Lewis took a mean advantage of me, for he said that if I did not write the paper he would call on me for the first speech after dinner. Now, Mr. Lewis knows I cannot make a speech, and, so, being in a hole, I chose the lesser of the two evils. Our secretary, Mr. Raub, asked me to take as my subject "Local Hardware Associations." I had an idea that so much had been said and written about the troubles of the Hardware business that I would paint a miniature of our joys, but as the subject suggested to me contains both sorrow and joy, I shall compromise and accede to Mr. Raub's request.

#### THE READING HARDWARE ASSOCIATION.

About ten years ago an association was formed in our city. We call it the Hardware Merchants' Association of Reading. Previous to our getting together I do not think there was any place in the country where the dealers fought each other more bitterly than in Reading. The feeling was personal, for when one of the employees of our competitors came into our establishment on business we followed him around to see that he did not steal any goods from the shelves. The fact that we did get together was due largely to the efforts of the late D. D. Lerch, the first president of our association, and I want to say here that although Mr. Lerch was stone blind, a brighter Hardwareman never bought or sold goods. Our organization continued from that time, and to-day is in a flourishing condition.

#### THE VALUE OF A GOOD DINNER.

Our main objects have been: First, to promote good feeling brought about by an intimate personal acquaintance with each other; second, to regulate the prices of staple goods, and, third, to discuss credits. The first is easy to do if you go about it the right way. We give a dinner once a month. Now every philosopher knows that a good dinner will do more to make a man rational than anything on earth. I will unhesitatingly say that had it not been for this feature of our meetings our association would now be extinct. We make it a strict rule never to talk shop at the table, but wait until the meal is finished, and then with a Havana between our teeth and a feeling of contentment in our stomachs, we open fire.

#### REGULATING PRICES.

The first point to be taken up is the proposition of regulating prices on staple goods for the ensuing month. This is a hard matter to handle, and must be done carefully. First, you ought to agree to observe the manufacturers' differentials (I am sorry to say that there seems to be a disposition among the jobbers to throw away the advantages created for them by the manufacturers), and, secondly, make your base price with as fair a margin of profit as possible, and stick to it. There is the great point. Just because a little dealer tells you that your competitor made him an extra 5 per cent.

don't be afraid to hold your ground and turn down the order if necessary. There is more trouble created in this way than in any other, and nine times out of ten the buyer is trying to work you. Of course, your competitor sometimes does cut the agreed price, but instruct your salesman to make a note of it, get his receipted bill if possible, and at the next meeting bring the matter up. A local association will not hold together if you will not be frank with each other. Everybody will cut prices now and then; but don't allow an occasional violation to break up your organization. If a man when caught breaking an agreed price is honest, he will say with Washington, "Yes, gentlemen, I did it with my little hatchet." Of course the harm is done and that tree is down, but there are other trees, and there is no necessity of chopping them all; but this is just what some of us are doing. The situation calls for patience.

#### CREDITS.

Another great advantage derived from local associations is in talking over credits. Some concerns make a practice of buying all they can get credit for at one store, then move on to the next and repeat the operation, and so on, until when they fail they owe everybody. This can all be prevented by a few heart to heart talks at the meetings. Don't be afraid to let your competitor know that this factory or that storekeeper deals with you. He knows it any way, and here is where a big annual leak can be partially stopped.

#### BUYING GOODS

The matter of buying goods can be handled together with great advantage. There are a lot of articles which must be bought in large lots to get the right price. Almost all of us know that there are some goods which we are not in position to buy in sufficient quantities to get the bottom figure. I know a jobber who can use about half a car of a certain article annually. He buys a car, but only puts half of it in his store. The other half he sells to dealers who do not often buy from him and who live some distance from his town. Now he demoralizes the trade for the men who cover this territory regularly, and does not do himself any good in the long run. How much better would it be for him to go to the monthly meeting of the association and ask his neighbor to help him out on the quantity? He only invests half the money, runs no risk of losing part of it by bad debts and does not demoralize the trade. The proof of the pudding is in the eating, and we have found that it is not only convenient, but is a great saving. Try it, and I assure you the results will be so beneficial that you will never regret it.

#### ONE HARD NUT TO CRACK

for local associations is how to keep your agreed prices when you meet outside competition. It is comparatively easy to respect the schedule among yourselves, but when you get a little way from home you are apt to meet competition from other jobbing centers. Then there ensues a grand slaughter of prices and the profits disappear. My advice is to get the local association of the other jobbing center to combine with you in holding up prices. Our Reading Association at one time made an effort to get two of our neighboring cities to join us. They came and had a good time. We were invited to their cities. We went, and had a better time, but no good came of it. Why? The reason was they had no local associations at home. If they had, we would have been successful; but we could not get them to join us, for they were unable to effect a permanent organization among themselves.

The millennium is not here yet, but we certainly can hasten it, to the benefit of our own pocketbooks, if we establish a local Hardware association in every city in New York and Pennsylvania, and then act in harmony.

#### Discussion.

After the submission of these papers Chairman Kemmerer announced that the meeting was open for general discussion, and this was entered into with considerable interest by the members of both associations.

The New York State Association, being one of the oldest trade organizations of this kind, were able to advance to the members of the younger association the

results of their experiences, which it was hoped might prove profitable to the Pennsylvania organization. The discussion seemed to develop the idea of the general approval of organization work, and methods and plans in the interest of the trade generally, both wholesale and retail, were interestingly discussed by all the members present. Remarks were made by the following gentlemen: Frederick Barker, Elmira, N. Y.; I. D. Booth, Elmira, N. Y.; F. W. Huff of the Supplee Hardware Company, Philadelphia; T. James Fernley, Philadelphia; Chas. H. Turner, Albany, N. Y.; A. J. Roat, Kingston, Pa.; W. H. Taylor, Scranton, Pa.; G. D. Palmer, Rochester, N. Y.; S. Spencer Scott of the Seltzer-Klahr Company, Philadelphia; Geo. D. Krause, Lebanon, Pa., and J. H. Ritter of the Biddle Hardware Company, Philadelphia.

The presence at the meeting of National Secretary T. James Fernley added considerable zest and interest to it. Mr. Fernley, having had so extended an experience along the lines of association work, was able to give those present a good deal of valuable information.

After adjournment of the business meeting the members of both organizations were elaborately entertained at a banquet served by the local members at the West Moreland Club.

The following were the speakers at the banquet, and it is needless to say that they fulfilled the demands of the occasion admirably, and added much to the entertainment and interest of the gathering: G. D. Palmer, Rochester, N. Y.; Gen. H. W. Palmer, Wilkes-Barre, Pa.; T. James Fernley, Philadelphia, Pa.; W. H. Taylor, Scranton, Pa.; J. M. Kemmerer, Scranton, Pa.; Chas. Turner, Albany, N. Y., and J. H. Ritter, Philadelphia, Pa.

The following houses connected with the associations were represented at the meeting:

#### PENNSYLVANIA ASSOCIATION.

Bright & Co., Reading, Pa.  
J. H. Obold & Co., Reading, Pa.  
Stichter Hardware Company, Reading, Pa.  
Bard, Schlott & Co., Reading, Pa.  
Bittenbender & Co., Scranton, Pa.  
Foote & Shear Company, Scranton, Pa.  
Charles B. Scott, Scranton, Pa.  
Scranton Supply & Machine Company, Scranton, Pa.  
Reilly Bros. & Raub, Lancaster, Pa.  
Geo. Krause & Co., Lebanon, Pa.  
C. Dreishach's Sons, Lewisburg, Pa.  
A. J. Roat, Kingston, Pa.  
C. Morgan's Sons, Wilkes-Barre, Pa.  
Pennsylvania Supply Company, Wilkes-Barre, Pa.  
Phelps, Straw & Co., Wilkes-Barre, Pa.

#### NEW YORK STATE ASSOCIATION.

Syracuse Hardware & Iron Company, Syracuse, N. Y.  
Burhans & Black Company, Syracuse, N. Y.  
Barker, Rose & Clinton Company, Elmira, N. Y.  
Irving D. Booth, Elmira, N. Y.  
Weaver, Palmer & Richmond, Rochester, N. Y.  
Albany Hardware & Iron Company, Albany, N. Y.

#### Meeting of the Pennsylvania Association.

At the annual meeting of the Pennsylvania Association, which was held just before the joint meeting described above, election of officers being in order, the following officers were chosen for the ensuing year:

PRESIDENT, J. M. Kemmerer.  
FIRST VICE-PRESIDENT, George Bard.  
SECOND VICE-PRESIDENT, A. J. Roat.  
SECRETARY-TREASURER, H. L. Raub.

The president named standing committees as follows:

EXECUTIVE COMMITTEE: George W. Lewis, A. B. Stein, H. S. Franklin, William A. Avery, L. C. Thompson.  
PRICE COMMITTEE: George W. Lewis, H. G. Dreishach, A. B. Stein.

The question of the number of regular meetings to be held during the ensuing year was taken up and thoroughly discussed, and it was finally decided that two regular meetings be held this year.

The present condition of the Cut Nail market was taken up and discussed, the general impression being that the position of jobbers of these goods is unsatisfactory, and the secretary was instructed to correspond with the Cut Nail Association with a view, if possible, of bettering the position of jobbers in these goods.

The subject of Twist Drills was brought forward, and the discussion related particularly to the manner in which these goods are marketed at present, and especially to the quantity necessary to obtain a rebate. The



Price Committee was directed to correspond with the manufacturers with the view of having certain modifications made.

After several addresses were made by members on matters of interest to the association only, it was decided to accept the invitation of the members from Lancaster, Pa., to hold the next regular meeting at that place on Wednesday, September 10.

In point of members present and enthusiasm manifested this meeting is referred to as by far the most successful the association has ever held.

### WATERBURY BRASS COMPANY.

**W**ATERBURY BRASS COMPANY, with factories at Waterbury, Conn., have lately moved their New York branch to 122-130 Centre street, where they occupy the two lower floors of the building, which is 72 x 100 feet in dimensions. This step has been taken in view of the large increase in their business, and the materially larger quarters now occupied will enable them to carry a much more complete stock than ever before, thus putting them in an excellent position to fill orders promptly and efficiently. In addition to Sheet Brass, Brass Wire and Rods, German Silver Sheets, Rods and Wire, &c., they have added Seamless Drawn Brass and Copper Tubes, including Iron Pipe sizes, and intend soon to install a complete stock of Cornice Copper and hot Rolled Copper, as well as Braziers' Sheets. They will also carry Yellow Metal Rods of all sizes. In addition to their Sheet Metal, Rods and Wire they will handle finished goods, such as Eyelets, special Brass Wares of various descriptions, including also Shells and Brass Ferrules. The new quarters have been laid out with special care and are admirably adapted to the requirements of the business. The offices are finely equipped and the whole establishment reflects much credit on the company. It is hoped that all friends of the company will make this store their headquarters when in New York, where they will find every convenience and courtesy extended to them.

This company were incorporated in 1845 and received a special charter in 1881. Their New York branch was established in 1846 at 15 Platt street, where they remained for several years, when they moved to 14 Platt street, directly opposite. Here they continued until 1856, when they removed to 52 Beekman street, where they were located for a period of 20 years. The business was then moved to 296 Broadway, where they remained another 20 years. The company then located at 60 Centre street, where they continued until recently, although these quarters were inadequate from the first. During all these years the business steadily expanded, necessitating with each removal increased space for the accommodation of their business.

During the past 38 years the New York store has been under the efficient management of John Sherman, who has been associated with the company since the opening of their branch in this city, a period of more than 54 years, and who is widely and favorably known in the trade. Mr. Sherman will continue to identify himself with the New York house, but he will not be so actively connected with its management as heretofore.

**FLINT & WALLING MFG. COMPANY**, Kendallville, Ind., manufacturers of the well-known Star Wind Mills and Water Supply Goods, have found it expedient to concentrate the business interests and management of their Eastern, domestic and foreign trade, and have recently opened an office at Room 1, 76 Broad street, New York. C. S. Geauque, who was formerly manager of this company's office at Philadelphia, and who is thoroughly conversant with the line, has the management and control of the new office. This change was found absolutely necessary in order to more fully meet the requirements of customers, both at home and abroad, and it is the intention of this company to work the trade vigorously the ensuing year. Any information desired pertaining to this line will be promptly furnished by addressing the company at their new office.

### ORIGIN OF ROSIN SIZED SHEATHING OR BUILDING PAPER.

**F**OR the facts contained in this sketch of the origin and growth of the manufacture of Rosin Sized Sheathing Paper for building and other kindred purposes, we are indebted to Chapman & Soden, 410-412 Atlantic avenue, Boston, manufacturers of Roofing and Paving Materials, including Sheathings and various Coal Tar Products.

Previous to 1871, we are advised, the only papers used for sheathing purposes were tarred and common dry Sheathing. So far as water proof properties were concerned, the tarred papers were excellent, but to many the odor was offensive; besides the wearing qualities were not good, as the heat in summer destroyed the life of the paper. The dry Sheathing was good as a protection against wind, but would not shed moisture.

Some time during the year 1871 a paper was introduced, called Rosin Sized Cane Fiber Sheathing. This product was supposed to have all the good qualities of tarred and dry Sheathing, as well as being odorless and water proof. The paper was made near Norfolk, Va., from sugar cane, the method of preparation being somewhat peculiar. Having cut the cane into the required lengths the material was placed in an old fashioned muzzle loading cannon and then discharged against a brick wall. This so bruised and crushed the cane that it was easily prepared for the beating engine, and after being run into rolls of about 60 pounds each when dried, was ready for the market.

These goods were made for about three years, but, upon the destruction of the mill by fire, the production ceased, there evidently not being money enough in the venture. After this product was withdrawn from the market, the idea occurred to A. H. Soden of the firm of Chapman & Soden, Boston, Mass., of making Rosin Sized Paper of the same material as used in the manufacture of the dry Sheathing, and, by the addition of rosin obtain a water proof odorless Sheathing Paper, the life of which, unlike the tarred product, would not be destroyed by heat, and which would shed water. This resulted in the introduction of the Beaver Brand Water Proof Rosin Sized Sheathing Paper, which for a long period was a leading product in this class of goods, and even now is said to have a high position for its water proof quality. From this beginning have sprung, we are advised, the endless brands and qualities of Rosin Sized Sheathing Papers.

### MISCELLANEOUS NOTES.

#### Coburn Trolley Track Mfg. Company.

Coburn Trolley Track Mfg. Company, Holyoke, Mass., have recently added to their line of carrying tracks a larger size which allows the use of trolleys about 6 inches in diameter. This track is made of heavy steel and is designed for use where larger loads are to be handled. It has been installed in foundries, machine shops and textile mills. The capacity of the track is about 5 tons and it can be operated by hand, using a chain hoist, but the concern are now making an electric motor to propel and hoist the load. It is claimed that this system is most convenient and economical for handling loads up to 5 tons and is now in use in many up to date manufacturing plants.

#### Remlik Floor Oiler.

The Empire Oil Company, 112 Chambers street, New York, are now manufacturing the Remlik floor oiler, a device of painted galvanized iron with a reservoir to hold the oil. It is made in two sizes, No. 1, 12 inches wide, holding 2 quarts of oil, and No. 2, 14 inches wide, with a capacity of 3 quarts. The apparatus is used with a long handle, as is done with a brush, there being a thick double felt rubbing surface at the bottom. At the top is a screw cap and opening 1½ inches in diameter through which to pour the oil, superseding a much smaller opening formerly which required a funnel in filling,

which can now be done direct from the can. The flow now is regulated by two thumb screws, the square shanks of which are held in place by a metallic reinforcement instead of a wood strip, as formerly made. An objection to the wood strip was the liability to crack under pressure. Another improvement is a long square tin pan about 2 inches high and the same width, with sufficient length to accommodate the oiler with which it is used, in which to place the oiler when filling the reservoir, so as to obviate the necessity of changing the regulating screws. Thus any ooze through the felt is caught in the pan and emptied back into the supply as the work is resumed. These and other minor changes have been recently made by the present proprietor, who in addition to selling the materials for oiling and polishing floors makes a business of doing this class of work by contract.

### Wrought Steel and Wrought Bronze Chain Door Fast.

Sargent & Co., New Haven, Conn., and 149-153 Leonard street, New York, have recently supplemented their lines of chain door fasts by the addition of attractive patterns having wrought steel and wrought bronze cases in all the finishes and quite moderate in cost. The various fasts are made in one size only, the cases being 6 inches long, not including the keeper. There are three styles in plain steel and bronze and four styles in ornamental iron and bronze metal.

### Rollman Food Chopper.

The Rollman Mfg. Company, Mount Joy, Pa., have just put on the market the Rollman food chopper No. 11, here illustrated. This machine is tinned, has steel cutters for fine and coarse cutting together with a nut



Fig. 1.—Rollman Food Chopper.

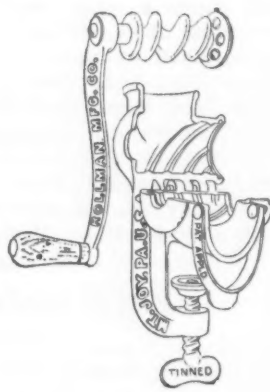


Fig. 2.—Chopper Open.

butter cutter for producing a smooth paste like mass desirable in grinding peanuts, almonds, &c. It has a capacity of  $\frac{1}{2}$  pound of raw or cooked meat per minute, and is especially recommended by the manufacturers for chopping nuts of various kinds. The machine is practically in two parts. One movement releases the clamp, thus throwing the hopper wide open; the worm



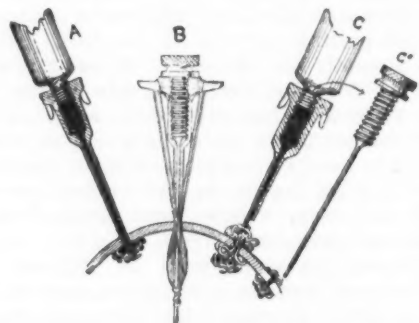
Fig. 3.—Coarse, Medium and Nut Butter Cutters.

screw, handle and disks are likewise practically in one piece, with the other half of the shell completing the chopper, making it easy to get at and quickly cleansed. The company also have in course of preparation two larger sizes, which will soon be ready for the market, their capacity being respectively 1 and 2 pounds of meat

per minute, and constructed on similar lines. The latter choppers will have a suitable groove underneath the split in the hopper to catch all the juices and lead them into the dish which catches the chopped meat, vegetables or fruit. The No. 11 size weighs but 18 ounces, and is designed to retail at 50 cents.

### The Bolton Automatic Quick Repair Tool.

The Union Mfg. & Specialty Company, 506-508 Genesee street, Buffalo, N. Y., are offering the repair tool illustrated herewith. A shows the tool with the needle C withdrawn and the cement tube attached, so as to inject the cement into the tire first. B shows the tool with any sized rubber bands applied. By releasing the screw and withdrawing the needle the bands are automatically and entirely detached from the tool, thus leaving the bands securely wedged into the tire. C shows the tool with the needle C withdrawn, and again replaced with the cement tube, when cement can again

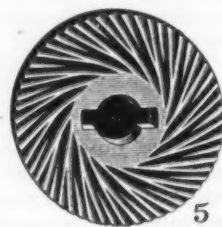


The Bolton Automatic Quick Repair Tool.

be injected, thus covering and saturating the bands. C represents the needle. The tool, which is neatly furnished and nicked plated, is for use on the road and in the shop. The manufacturers explain that any size of rubber bands may be used without affecting the working of the tool; that it is impossible to withdraw the bands with the rod; that the tool is neat, simple, compact and substantial; that, due to its peculiar construction, a repair of a repair can be made; that the tool keeps itself clean, and that a positive repair can be made on the road in single tube tires, whether it be automobile, vehicle or carriage.

### Gem Food Chopper, Butter Grinding Nut.

Sargent & Co., New Haven, Conn., and 149-153 Leonard street, New York, have added an extra cutter to the group of four steel cutters sent out with the Gem food chopper, which is designed to grind nuts of various kinds to the consistency of a butter. The other cutters of this chopper have apertures in the plates to regulate the degree of cutting—either coarse, medium, fine or pul-



Nut Butter Cutter for Gem Food Chopper.

verized—but, as will be seen by reference to the illustration herewith, there is no outlet in the No. 5 cutter other than at the periphery of the grinder, thus producing a smooth, pastelike mass, necessary in grinding of this character. This steel cutter, known as No. 5, is sent with either the No. 20 or No. 22 Gem food chopper, at no additional cost, and is particularly suitable for making peanut butter or grinding almonds or other nuts.



### New Angle Boring Bit Stock.

The Smith & Hemenway Company and the Utica Drop Forge & Tool Company of 296 Broadway, New York City, are introducing the 1901 model of their new angular bit stock. It is referred to as being adapted for use in connection with any bit or boring machine, also for reaming holes, turning screws, nuts, &c., in angles heretofore impossible. The chuck part of the machine bends as far as the dotted lines show, and is locked firmly with the set pin at any angle desired. The gearings, it is remarked, are turned out of the finest bar

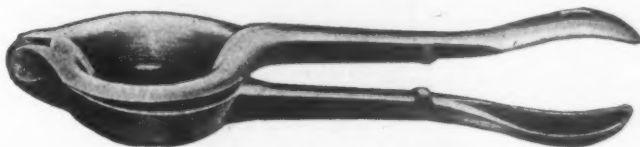


*New Angle Boring Bit Stock.*

steel with cut teeth, the shaftings and side plates of the finest Bessemer stock, while all parts are turned and fitted to run perfectly true. It is alluded to as having a beautiful finish, strongly made, and as being used to bore any size hole. It is suggested that a few of the uses to which it can be put are boring against partitions, alongside the wall, between beams, around projections, shelves and in close straight angles. It is particularly adapted for gas fitters, plumbers, bell hangers, carpenters, blacksmiths and cabinet makers, as well as wheelwrights and agricultural workmen. Our European readers may obtain a sample of the bit stock and prices from the company's London office, 19 Holborn Viaduct, W. P. Notcutt, manager.

### Sterling and American Lemon Squeezers.

The accompanying cuts illustrate two of the 1902 lemon squeezers put on the market by the Logan & Strobbridge Iron Company, New Brighton, Pa. The squeezer shown in Fig. 1 is large, and is much stronger than others of the same capacity made by the company.



*Fig. 1.—Sterling Lemon Squeezer No. 16.*

The arrangement of the pressure bowl and bob is such that the rind of the lemon, when under pressure, spreads instead of curling inward, as is the case, it is remarked, with the ordinary shaped bowl. This arrangement, it is explained, extracts all the juice, whereas the old style allowed some of the juice to remain in the curled up edges of the rind. The manufacturers state that it is



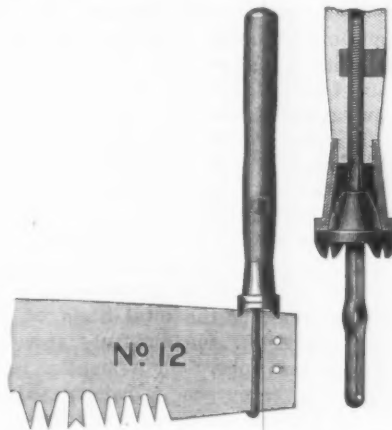
*Fig. 2.—American Queen Lemon Squeezer No. 18.*

made of the best quality of iron, coated all over with pure tin. In Fig. 2 is shown a squeezer and juice extractor combined. The cup is detachable, and can be used by itself as a juice extractor. By a slight turn of

the thumb, after the cup is placed in the frame, it is as securely fastened as if made solid with the frame. It is stated that it is quite as easily and quickly detached for cleaning or for use as an extractor. The frame and handles are finished in japan, while the extractor cup is tinned all over with pure tin.

### Atkins Cross Cut Saw Handle No. 12.

E. C. Atkins & Co., Indianapolis, Ind., are offering the cross cut saw handle shown herewith. The handle has a solid iron combination plug and nut with lugs. It

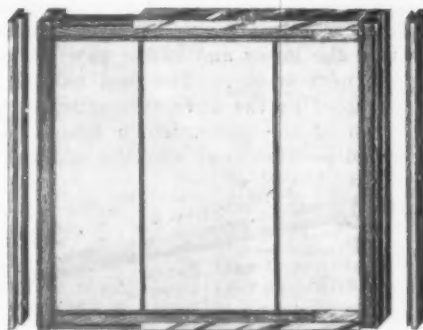


*Atkins Cross Cut Saw Handle No. 12.*

is explained that it will not twist, and also that the handle can be screwed tight without breaking. The device is referred to as a strictly high grade handle.

### The New Twentieth Century Adjustable Sliding Window Screen.

The A. J. Phillips Company, Fenton, Mich., F. P. Wilkinson, 90 West Broadway, New York, sales agent, are offering the adjustable sliding window screen here-with illustrated. The general construction is similar to the company's Flyer pattern of adjustable window screen, in which two frames slide upon each other and thus secure an adjustment fitting the window in width. In the Flyer screen, it is remarked, the only attempt is to produce a screen which can be spread under the lower sash of a window. The screen illustrated, while adjustable in width, is arranged to slide up and down on



*The New Twentieth Century Adjustable Sliding Window Screen.*

dovetailed slide sticks, which the customer nails to his casings. The screens may be used either inside the window or outside, preferably inside. The sash is thus permitted to slide past the screen and to be raised to any desirable height. It is pointed out that the construction of the screen is such that either side of it presents a straight line entirely across the screen, so that it is fly tight. When the screen is used outside the sash the slide sticks are nailed to the outside stops. The screen

may be raised and lowered whenever desired, and whether left inside or outside it is always in place. The frames are made of beechwood, oiled. The steel bindings on the edges of the wire cloth and the metal cap on the top and bottom of the screen are painted the same color, usually green.

### Pearson Cyclone Spike Puller.

Charles Morrill, 277 Broadway, New York, has just placed on the market the Pearson Cyclone spike puller, here illustrated. This tool is intended for general railroad work, but is especially suitable for withdrawing spikes between guard rails, switches, and on bridges, trestles and embankments, as well as any places where the operator has a limited space in which to work, and an insecure footing. One of the advantages of this puller is its saving of wear and tear on spikes and ties. The spike is extracted in the same condition in which it is in the wood. The hole in the tie is not enlarged nor the tie split. Only one operator is required, it is stated, and his strength alone can be used to a large extent to do the work. This puller weighs about 30 pounds, and consists of a cast steel frame 23 inches in height, into the top of which is screwed a 1½-inch tube 28 inches long, making the total height of the tool 51 inches. Through the frame and tube passes a square rod, having on the upper end a smaller rod provided with a button for the purpose of raising or lowering the rod. On the lower end of the rod is attached the spike gripping apparatus, which consists of a pair of Swedish steel jaws, arranged to work on the toggle joint principle. The rod is also provided with a set of ratchet teeth, which engage with a pawl actuated by a cam on the end of a 38-inch lever handle. The leverage is so adjusted that for every 100 pounds pressure exerted on the lever handle a lifting force of over 3½ tons is obtained. In extracting the spike a second pawl and a friction spring prevent the rod from falling. All of the working parts have been designed to work with a large factor of safety over any load that they may be called upon to carry. In withdrawing a spike the lever handle is brought up close to the stock, thus releasing the upper pawl and allowing the rod to be moved up and down by the button on top. In this position the rod is held suspended at any place, against the action of its own weight, by the friction spring. The tool is then placed centrally over the head of the spike to be withdrawn, the base of the spike puller partly resting on the rail and partly on the tie. The jaws are then pushed down by means of the button on top, and all is in readiness to withdraw the spike. The lever handle is pushed down until a click is heard, which indicates that the uppermost pawl has engaged with the ratchet and that the rod has been raised from its proper distance. The handle is then raised until another click is heard, which indicates that the lower and lifting pawl is in position to begin the next stroke. The first half of the first stroke is occupied by the jaws automatically closing in over the head of the spike, which brings the handle from a vertical position to an almost horizontal position.



Pearson Cyclone Spike Puller.

This is referred to as a great advantage, as it enables the operator to use his weight in starting the spike. Four successive movements should withdraw a spike of regular railroad practice. When the spike is withdrawn a tap on the button or a throw to one side will release it. We are advised that the tool will have the same

careful workmanship and quality of material as the other fine tools and hardware specialties made by this concern.

### Drop Forged 15-Degree Angle Wrench.

J. H. Williams & Co., 9-31 Richards street, Brooklyn, N. Y., manufacturers of drop forgings, have just put on the market what they believe to be the largest drop forged wrench in the world, as shown in the ac-



Mammoth 15-Degree Angle Wrench, Drop Forged.

companying engraving. Especial attention is drawn to this tool by the company as a finely finished product with which to adjust the nuts on bolts of mammoth engines without ruining finished nuts. This particular

wrench weighs 150 pounds, is 50 inches long, has an opening of 7½ inches to take a nut for a 5-inch bolt, and is master of a line of 15-degree angle tools originated by J. H. Williams 17 years ago. In contrast with this immense tool is the smallest of the series, No. 00, weighing but ¼ ounce, or 128 to the pound.



# Current Hardware Prices.

REVISED FEBRUARY 18, 1902.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 83½@83½@10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent. discount.

**Cut Prices.**—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also **THE IRON AGE INDEX SUPPLEMENT** (April 4, 1901), which gives a classified list of the products of our advertisers and thus serves as a **DIRECTORY** of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic, 7 doz. \$3.00... 33½@33½@10%  
North's... 10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent... 25¢50¢  
Taplin's Perfection... 50¢

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Arman Hammer, Wrought... 25¢50¢  
Steel Patent... 25¢50¢  
Eagle Anvil... 25¢50¢  
Hay-Budden, Wrought... 25¢50¢  
Horseshoe Brand, Wrought... 25¢50¢

## Imported—

Peter Wright's... 0%@94¢

**Anvil, Vise and Drill—**

Millers Falls Co., \$13.00... 20%

**Apple Parers**—See Parers, Apple, &c.

**Aprons, Blacksmiths'—**

Hull Bros. Co... 25¢  
Lots of 1 doz... 25¢  
Smaller Lots... 25¢  
Lots of 3 doz... 25¢

**Augers and Bits—**

Qm. Double Spur... 70¢70¢10%  
Boring Machine Augers... 60¢10¢10%70¢10%

Car Bits, 12-in. twist... 60¢80¢10%

Jennings' Pattern Auger Bits... 50¢10¢5¢60%

Ford's Auger and Car Bits... 40¢10%

Forster Pat. Auger Bits... 30%

C. E. Jennings & Co... 30%

No. 10 ext. lip, E. Jennings' List... 50%

No. 20, E. Jennings' List... 50%

Russell Jennings... 25¢10¢4%

L'Hommedieu Car Bits 15¢10¢15¢10¢5%

Mayhew's Countersink Bits... 45%

Pugh's Black... 30%

Pugh's Jennings' Pattern... 30%

Snell's Auger Bits... 90%

Snell's Bell Hangers' Bits... 50¢10%

Snell's Car Bits, 12-in. twist... 60%

Wright's Jennings Bits (R. Jennings' List)... 50%

**Bit Stock Drills—**

Standard List... 65¢55¢5%

**Expansive Bits—**

Clark's small, 15¢; large, 25¢... 50¢10%

Lavigne's Clark's Pattern, No. 1, 7 doz. \$20; No. 3, \$18... 50¢10%

C. E. Jennings & Co. Steel's Pat... 33½

Swan's... 25%

**Climlet Bits—**

Common Double Cut, gro. \$2.55@2.75

German Pattern... gro. \$4.00@4.75

**Hollow Augers—**

Bonney Pattern, per doz. \$11.00@11.50

Ames... 25¢10%

New Patent... 25¢10%

Universal... 20%

Wood's Universal... 20%

**Ship Augers and Bits—**

Ford's... 40%

Suelli's... 40%

C. E. Jennings & Co... 40%

L'Hommedieu's... 15¢10%

Watrous'... 40%

**Awl Hafts, See Hafts, Awd.**

**Awls—**

Bradley's... 25¢

Handled... gro. \$2.75@3.10

Unhandl'd, Shouldered, gro. 65¢@60¢

Unhandl'd, Patent... gro. 60¢@70¢

Peg Awls... 25¢

Unhandl'd, Patent... gro. \$1@1.50

Unhandl'd, Shouldered, gro. 65¢@70¢

Scratch Awls... 25¢

Handled, Common, gro. \$3.50@4.00

Handl'd, Socket, gro. \$11.50@12.00

**Awl and Tool Sets—See Sets, Awl and Tool.**

**Axes—**

First Quality, best brands, \$5.50@5.75

First Quality, other brands, \$5.25@5.50

Jobbers' Special Brands... 25%

Good Quality... \$4.50@4.75

Best Quality... \$5.00@5.25

Cheap, Handled Axes... \$5.50@5.75

Beeled, ad 50¢ doz.

**Axle Grease—See Grease, Axle.**

## Axles—

Concord, Loose Collar... 44¢@50¢

Concord, Solid Collar... 34¢@36¢

No. 1, Common... 34¢@36¢

No. 1, Com. New Style... 34¢@36¢

No. 1, Solid Collar... 44¢@50¢

Nos. 11 to 14... 70¢70¢10%

Nos. 15 to 18... 75¢@75¢10%

Nos. 19 to 22... 75¢@75¢10%

**Boxes, Axle—**

Common and Concord, not turned... lb. 44¢@44¢

Common and Concord, turned... lb. 44¢@50¢

Half Patent... lb. 44¢@50¢

**Balances—Sash—**

Caldwell new list... 50%

Pullman's... 60%

**Spring—**

Spring Balances... 50¢10¢@60%

Chatillon's... 40¢10%

Straight Balances... 40%

Circular Balances... 50%

Large Dial... 30%

P... 50%

**Barb Wire—See Wire, Barb.**

**Bars—Crow—**

Steel Crowbars, 10 to 40 lb. per lb... 14¢@3¢

**Beams, Scale—**

Scale Beams, List Jan. 18, '95... 10¢10%

Chatillon's No. 1... 30%

Chatillon's No. 2... 40%

**Beaters—Egg—**

Standard Co... \$4.50

No. 0 Rapid... \$4.50

No. 10 Dover Family Size... \$5.50

No. 15 Dover Hotel Size... \$12.00

Rival... \$9.00

Taplin Mfg. Co... \$4.50

No. 69 Improved Dover... \$6.50

No. 75 Improved Dover... \$7.50

No. 75-2 Imp'd Dove, Tind... \$9.00

No. 100 Improved D. ver... \$8.00

No. 102 Improved Dover, Tind... \$15.00

No. 150 Improved Dover, Hotel, \$15.00

No. 152 Imp'd Dover, Hotel, T'd... \$7.00

Lyon's, Standard size... \$7.00

Wonder (S. S. & Co.)... \$7.50

**Bellows—**

Blacksmith, Standard List, 70¢70¢10%

O. E. Jennings & Co. Blacksmith... 60¢10%

C. E. Jennings & Co. Hand... 33½

**Blacksmiths—**

Inch... 30 33 35 35 35 40

Each... \$3.50 3.75 4.25 4.50 5.35 6.15

**Extra Length—**

Each... \$4.50 4.55 5.10 5.50 6.40 7.50

**Molders—**

Inch... 9 10 11 12 14 16

Dos... \$9.75 7.25 8.50 9.50 12.00 14.50

**Hand—**

Inch... 6 7 8 9 10 12

Dos... \$3.75 4.25 4.50 5.00 5.7 6.75

**Bells—Cow—**

Ordinary goods... 75¢5¢75¢10%

High grade... 70¢70¢10%

Jersey... 75¢10%

Texas Star... 50%

**Door—**

Abbe's Gong... 45%

Barton Gong... 55%

Home, R. & E. Mfg. Co's... 55¢10%

Lever and Pull, Sargent's... 40¢40¢10%

Yankee Gong... 35%

**Hand Bells, Polished... 60¢5¢@60%**

White Metal... 65¢@55¢10%

Nickel Plated... 60¢@55¢10%

Suiss... 60¢@60¢10%

Silver Chime... 60¢@60¢10%

**Miscellaneous—**

Form Bells... lb. 5¢@14¢

Steel Alloy Church and School... 60¢10¢5¢@80%

National Bell Foundry Co... 50%

Superior Cast Steel Church and School... 50¢10¢5¢@80%

Bells... 50¢10¢5¢@80%

Wilcox & Hobbs Mfg. Co. Gongs... 70%

**Belt—Rubber—**

Agricultural (Low Grade)... 75¢10¢@80%

Common Standard... 75¢10%

Standard... 70¢70¢10%

Extra... 60¢10¢5¢@80%

High Grade... 60¢10¢5¢@80%

Boston Belting Co... 50%

Seamless Stitched, Imperial... 45¢5%

Boston... 50¢5%

Niagara... 60¢5%

**Leather—**

Extra Heavy, Short Lap... 50¢10¢@60%

Regular Short Lap... 60¢60¢5%

Standard... 60¢10¢@55¢17%

Light Standard... 65¢70%

Leather Lacing... 80¢10%

**Cotton—**

Rossendale-Reddaway B. & H. Co... 60¢10%

Sphinx Brand... 60¢10%

Durable Brand... 70%

**Bench Stops—See Stops, Bench**

**Benders and Upsetters, Tire—**

Green River Tire Benders and Upsetters... 30%

Stoddard's Lightning Tire Upsetters... 40¢50%

**Bicycle Goods—**

John S. Long's Son's 1899 list... 50%

Chain... 50%

Spokes... 50%

Tub's... 60%

**Bits—**

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

**Bit Holders—See Holders.**

**Blind Adjusters—See Adjusters, Blind.**

**Blind Fasteners—See Fasteners, Blind.**

**Blind Staples—See Staples, Blind.**

**Blocks—Tackle—**

Common Wooden... 70¢10¢75%

Cleveland's tool... 80¢10¢70%

Ford's Star Brand Self Lubricating... 60¢10%

Hollow Steel, Ford's Pat. Star Brand... 50¢10%

Lane's Patent Automatic Look and Junior... 30%

Stowell's Novelty, Mal. Iron... 50¢10%

See also Machines, Hoisting.

**Boards Stove—**

Zinc, Crystal, &c... 40¢40¢10%

**Bolts—**

Carriage, Machine &c.—Common, list Jan. 31, '95... 60¢10%

Norway Iron, \$3.00, list Oct. 7, '94... 80¢30¢5%

Phila. Eagle, \$3.00 list May 24, '99... 80¢30¢10%

Bolt Ends, list Jan. 30, '95... 70¢5%

Machine, list Oct. 1, '99... 70%

Machine with C & T. Nuts... 65¢7½¢

**Door and Shutter—**

Cast Iron Barrel, Round Brass Knob... 3 4 5 6 8

Per doz... \$0.75 .50 .39 .47 .55

Cast Iron Spring Foot... 6 8 10

Per doz... \$1.00 1.35 1.75

Cast Iron Chain, Flat, Japanned... 6 8 10

Per doz... \$0.75 1.05 1.20

Cast Iron Shutter, Brass Knob... 6 8 10

Per doz... \$0.67 .40 1.00

Wrought Barrel Brass Knob... 3 4 5 6 8

Per doz... \$0.44 .50 .61 .70 1.23

Wrought Barrel... 70¢10¢75¢5%

Wrought Flush, B. K... 60¢10¢80¢10%

Wrought Shutter... 60¢10¢10¢50¢5%

**Cartridges—**  
Blank Cartridges:  
30 O. F. \$5.50 ..... 10c50  
38 O. F. \$7.01 ..... 10c50  
30 cal. Rim. \$1.50 ..... 10c50  
30 cal. Rim. \$2.75 ..... 10c50  
B. B. Caps. Con. Ball Supd. \$1.90  
B. B. Caps. Round Ball ..... \$1.49  
Central Fire ..... 25c  
Target and Sporting Rifle ..... 15c10  
Primed Shells and Bullets ..... 15c10  
Rim Fire Sporting ..... 50c  
Rim Fire Military ..... 15c10

**Castors—**  
Bed ..... 70c10@70c10c50  
Plate ..... 75c10@75c10c50  
Philadelphia ..... 75c10@75c10c50  
Boss Anti-Friction ..... 70c10c  
Martin's Patent (Phoenix) ..... 45c  
Payson's Anti-Friction ..... 70c10@10c10c  
Standard Ball Bearing ..... 45c  
Tucker's Patent, low list ..... 80c

**Cattle Leaders—**  
See Leaders, Cattle.

**Chain, Coll—**  
American Coll. Cask lots:  
-16 1/4 5-16 3/4 9-16  
8-20 6-10 5-10 4-5 4-5 4-10  
3/4 3/4 1/2 1 1/2 1 1/2 inch.  
5-25 4-20 4-20 4-20 per 100 lb.  
Less than Cask lots add \$50.  
German Coll. ..... 60c10@10c10c  
Halter and Ties—  
Halter Chains ..... 60c10@10c10c  
German Halter Chain, list July 24, '97 ..... 60c10@10c10c  
Cow Ties ..... 60c

**Trace, Wagon, &c.—**  
Traces, Western Standard: 100 pair  
6 1/2-6 3/4, Straight, with ring ..... \$30.00  
6 1/2-6 3/4, Straight, with ring ..... \$31.00  
6 1/2-6 3/4, Straight, with ring ..... \$35.00  
6 1/2-6 3/4, Straight, with ring ..... \$38.00  
Add 2c per pair for Hooks.  
Twist Traces 2c per pair higher than  
Straight Link.  
Trace, Wagon and Fanny Chains ..... 60c10@10c10c

**Miscellaneous—**  
Jack Chain, list July 10, '93:  
Iron ..... 60c10@10c10c  
Brass ..... 60c10@10c10c  
Safety Chains ..... 70c10@10c10c  
Gal. Pump Chains ..... 10c 4-5/8c  
Covert Mfg. Co.:  
Breast ..... 35c25  
Halter ..... 35c25  
Heel ..... 35c25  
Rein ..... 35c25  
Stallion ..... 35c25  
Covert Bad Works:  
Breast ..... 70c  
Halter ..... 70c  
Hold Back ..... 70c  
Rein ..... 70c  
Onida Company:  
Am. Coll and Halters ..... 40c45c55c  
Am. Cow Ties ..... 45c50c  
Gay's Coll and Halters ..... 45c50c55c  
Niagara Coll and Halters ..... 45c50c55c  
Niagara Cow Ties ..... 45c50c55c  
Wire Dog Chains ..... 45c50c55c  
Wire Goods Co.:  
Dog Chain ..... 60c10c  
Universal Dog Jointed Chain ..... 50c  
Chalk (From Jobbers).  
Carpenters' Blue ..... gro. 42c45c  
Carpenters' Red ..... gro. 37c40c  
Carpenters' White ..... gro. 35c35c  
See also Crayons.

**Chalk Lines—See Lines.**

**Checks, Door—**  
Hardsley's ..... 40c10c  
Columbia ..... 50c10c  
Eolipso ..... 60c10c10c

**Chests, Tool—**  
American Tool Chest Co.:  
Boys' Chests, with Tools ..... 35c  
Youths' Chests, with Tools ..... 45c  
Gentlemen's Chests, with Tools ..... 30c  
Farmers', Carpenters', etc., Chests, with Tools ..... 30c  
Mechanists' and Pipe Fitters' Chests ..... 30c  
Empty ..... 30c  
C. E. Jennings & Co.'s Mechanists' Tool Chests ..... 25c  
Chisels—  
Socket Framing and Firmer  
Standard List ..... 70c50@70c10c  
Buck Bros. ..... 30c  
Charles Buck ..... 30c  
No. 10 ..... gro. 37c40c  
C. E. Jennings & Co. Socket Framing No. 10 ..... 60c10c  
Swan's ..... 70c50c  
L. & J. White ..... 80c90c55c

**Tanged—**  
Tanged Firmers ..... 40c50@40c10c  
Buck Bros. ..... 30c  
Charles Buck ..... 30c  
C. E. Jennings & Co. Nos. 10, 11, 12 ..... 35c  
L. & J. White, Tanged ..... 25c55c

**Cold—**  
Cold Chisels, good quality, lb. 13c15c  
Cold Chisels, fair quality, lb. 11c13c  
Cold Chisels, ordinary, lb. 8c9c

**Chucks—**  
Beach Pat. each \$5.00 ..... 30c  
Massey's Planer and Milling ..... 15c20c  
Kittner Patent Chucks:  
Combination Lathe Chucks ..... 40c  
Drill Chucks, Patent and Standard ..... 25c  
Drill Chucks, New Model ..... 25c  
Independent Lathe Chucks ..... 40c  
Improved Planer Chucks ..... 40c  
Universal Lathe Chucks ..... 40c  
Face Plate Jaws ..... 40c  
Standard Tool Co.:  
Improved Drill Chuck ..... 45c  
Union Mfg. Co.:  
Combination ..... 40c  
Gear Drill ..... 30c  
Geared Scroll ..... 30c  
Independent ..... 40c  
Union Drill ..... 30c  
Universal ..... 40c  
Face Plate Jaws ..... 35c

**Clamps—**  
Adjustable, Hammers ..... 90c20c55c  
Sabinet, Sargent's ..... 50c10c

Carriage Makers', P., S. & W. Co. 40c10c  
Carriage Makers' Sargent's ..... 50c10c  
Beary, Parallel ..... 35c10c  
Lineman's, Union Drop Forge & Tool Co. .... 40c  
Saw Clamps, see Vices, Saw Meters.

**Cleaners, Sidewalk—**  
Star Socks, All Steel ..... \$1.00 net  
Star Shank, All Steel ..... \$3.75 net  
W. & C. Shank, All Steel, 7 1/2 in. 10 doz. \$3.05; 8 in. \$3.10; 8 1/2 in. \$3.25.

**Cleavers, Butchers—**  
Foster Bros. ..... 30c  
New Haven Edge Tool Co.'s ..... 40c  
Fayette H. Plumb ..... 50c50c55c  
F. S. & W. L. & J. White ..... 35c

**Clippers—**  
Chicago Flexible Shaft Company  
Handy Toilet ..... \$7.30  
Mascoite Toilet ..... \$3.40  
Monitor Toilet ..... \$9.00  
Stewart's Patent ..... \$10.00

**Clips Axle—**  
Eagle and Superior 1/4 and 5-16 inch ..... 70c10c  
Norway, 1/2 and 5-16 inch, 70c10c10c

**Cloth and Netting, Wire**  
See Wire, &c.

**Cocks, Brass—**  
Hardware list:  
Compression and Plain Bibbs ..... 65c50@55c10c  
Globe, Kerosene, Racking, &c. .... 65c10c70c  
Cocks ..... 65c10c70c

**Coffee Mills—See Mills, Coffee.**

**Collars, Dog—**  
Brass, Pope & Stevens' list ..... 40c  
Embossed, Gilt, Pope & Stevens' list 30c10c  
Leather, Pope & Stevens' list ..... 40c

**Compasses Dividers, &c.—**  
Ordinary Goods ..... 75c75c55c  
Bemis & Cail Hd. & Tool Co.:  
Dividers ..... 65c  
Callipers, Call's Patent Inside ..... 55c  
Callipers, Double ..... 55c  
Callipers, Inside or Outside ..... 55c  
Callipers, Wing ..... 80c  
Compasses ..... 50c  
J. Stevens A. & T. Co. ..... 35c10c

**Compressors Corn Shock—**  
J. B. Hughes' per doz. ..... \$2.50

**Conductor Pipe, Calva.—**  
L. C. L. to Dealers:  
Territory ..... Noted.  
Eastern ..... 70c50@10c70c50c10c  
Central ..... 65c10c10c  
Southern ..... 65c10c  
S. Western, 60c12 1/2c10c 60c15c10c  
Terms, 25 for cash.  
Jobbers receive extra 1 1/2% on car loads loose, and extra 1 1/2% on car loads crated.  
See also Eave Troughs.

**Coolers, Water—**  
Gal. each ..... 2 3/4 3 3/4 4 3/4 5 3/4 6 3/4  
Labrador \$1.20 \$1.50 \$1.50 \$2.10 2.20  
Gal. ..... 4 3/4 5 3/4 6 3/4 7 3/4 8 3/4  
Ice land, ea. \$1.80 \$2.10 \$2.40 \$3.00  
Gal. ..... 2 3/4 3 3/4 4 3/4 5 3/4 6 3/4  
Galv. Lined Ea. \$1.85 \$2.00 \$2.25 \$2.50 \$2.90  
25c  
Gay's Lined handles  
Each. 2 3/4 3 3/4 4 3/4 5 3/4 6 3/4 \$4.15, 25c

**Coopers' Tools—**  
See Tools, Coopers.

**Cord—Sash—**  
Braided, Drab ..... lb. 85c  
Braided, White, Common, lb. 17c18c  
Cable Laid Italian, lb. A, 15c; B, 18c  
Common India ..... lb. 9c  
Cotton Sash Cord, Twisted ..... lb. 12c15c  
Patent Russia ..... lb. 12 1/2c13c  
Cable Laid Russia ..... lb. 13 1/2c14c  
India Hemp, Braided ..... lb. 14c15c  
India Hemp, Twisted ..... lb. 10c12c  
Patent India, Twisted ..... lb. 10c12c  
Pearl Braided, cotton ..... lb. 17c  
Massachusetts, White ..... lb. 22c  
Massachusetts, 2 in. ..... lb. 24c  
Eddystone Braided Cotton ..... lb. 19c  
Harmony Cable Laid Italian ..... lb. 18c  
Ossawau Mills:  
Crown, Solid Braided White ..... lb. 22c  
Braided, Giant, White ..... lb. 20c  
Cable Laid Italian ..... 14c  
Cable Laid Russian ..... 14c  
Cable Laid India ..... 12c  
Braided India ..... 18c  
Phoenix, White ..... 19c  
Samson, Nos. 7 to 12:  
Braided, Drab Cotton ..... lb. 8 1/2c  
Braided, Italian Hemp ..... lb. 33c  
Braided, Linen ..... lb. 40c  
Braided, White Cotton, Spot, 2 1/2 in. 6 1/2c  
Silver Lake:  
A quality, Drab, 40c ..... 15c  
A quality, White, 35c ..... 15c  
B quality, Drab, 35c ..... 15c  
B quality, White, 30c ..... 15c  
Italian Hemp, 40c ..... 15c  
Linen, 57 1/2c ..... 15c

**Wire, Picture—**  
Braided or Twisted ..... 85c10c  
Note:—There is a good deal of confusion in lists, some using old list and others the new list.

**Corn Knives and Cutters**  
—See Knives, Corn.

**Corn Planters—**  
See Planters, Corn.

**Crackers, Nut—**  
Little Giant ..... \$ gr. \$24.00

**Cradles—**  
Grain ..... 50c

**Crayons—**  
White Round Crayons, gross 5 1/2c  
Cases, 100 gro. \$4.50, at factory.  
D. M. Steward Mfg. Co.  
Mat Workers' Crayons, gr. \$2.50  
Soapstone Pencils, round, flat or square ..... gr. \$1.50  
Rolling Mill Crayons ..... gr. \$2.50  
Railroad Crayons (composition) gr. \$2.00

See also Chalk.

**Creamery Pails—See Pails.**

**Crooks, Shepherd's—**  
Fort Madison, Heavy ..... \$ doz. \$7.00

Fort Madison, Light ..... \$ doz. \$6.50

**Crow Bars—See Bars, Crow.**

**Cultivators—**  
Victor Garden ..... \$ doz. \$10.00

**Cutlery, Table—**  
International Silver Company:  
No. 12 Medium Knives, 187 ..... \$ doz. \$3.50  
Star, Eagle, Rogers & Hamilton and Anchor ..... \$ doz. \$3.00  
Wm. Rogers & Son ..... \$ doz. \$2.51  
Smeon L. & Geo. H. Rogers Company:  
12 dwt. Medium Knives ..... \$ doz. \$3.01  
No. 7 Medium Knives ..... \$ doz. \$2.51

**Cutters—Glass—**  
H. H. Mayhew Co. ..... 40c  
Smith & Hearnway Co. ..... 50c

**Meat—**  
Hale's, Nos. 11 & 11 1/2 11 1/2 11 1/2 11 1/2  
Per doz. \$9.50 15.50 16.00  
American ..... 80c  
Nos. 1 ..... \$7 \$10 \$25 \$50 \$80  
Connection ..... 50c  
No. 1 ..... 20 40 60 80 10 12  
Each \$1.75 2.00 2.25 3.00 3.00 4.00  
Enterprise ..... 25c25c75c  
Nos. 5 10 12 22 32  
Each ..... \$2 \$3 \$2.50 \$4 \$6  
Dixon's, per doz. 3c10c40c  
Nos. 1 ..... 3 4 5  
\$14.00 \$17.00 \$19.00 \$30.00  
Home No. 1, per doz. \$23.75 ..... 50c10c  
Little Giant, per doz. 35c40c  
Nos. 305 310 312 320 322  
\$35.00 \$45.00 \$44.00 \$74.00 \$68.00  
Sterling ..... 35c55c  
Nos. 1 ..... 1 2 50  
Each ..... \$5.00 \$2.50  
New Triumph No. 605, per doz. \$24.00  
Nos. 305 310 312 320 322  
\$35.00 \$45.00 \$44.00 \$74.00 \$68.00

**Woodruff's, per doz. 30c10c40c**  
Nos. 100 150 180  
\$15.00 \$18.00 \$20.00  
Chadborn's Smoked Beef Cutter, per doz. \$60.00  
Enterprise Beef Shavers ..... 25c30c

**Saw and Kraut—**  
Henry Dison & Sons:  
Saw, Corn Grater, &c ..... 40c  
Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 55c  
Kraut Cutters 36 x 12, 40 x 12 ..... 40c  
Tucker & Dorsey Mfg. Co.:  
Saw Cutters, 1 Knife, per gr. \$13.50  
Saw Cutters, 2 Knife, per gr. \$13.50

**Tobacco—**  
All Iron, Cheap, per doz. \$4.50  
Enterprise ..... 25c50c  
National, per doz. \$21.00 ..... 40c  
Sargent's, per doz. No. 2 ..... 45c10c  
Sargent's No. 1 and 2 ..... 50c10c

**Washer—**  
Appleton's, per doz. \$16.00 ..... 50c10c10c  
Bonney's ..... 40c

**Diggers, Post Hole, &c.—**  
Dalbey Post Hole Auger, per doz. \$22.00  
Iwan's Improved Post Hole Auger ..... 40c  
Iwan's Perfection Post Hole Digger ..... 40c  
Kohler's Universal ..... \$ doz. \$14.00  
Kohler's Little Giant ..... \$ doz. \$14.00  
Kohler's Hercules ..... \$ doz. \$13.00  
Kohler's Invincible ..... \$ doz. \$10.00  
Kohler's Rival ..... \$ doz. \$9.00  
Kohler's Pioneer ..... \$ doz. \$9.00  
Never-Break Post Hole Diggers, per doz. \$24.00 ..... 60c  
Samson, per doz. \$34.00 ..... 25c

**Dividers—See Compasses.**

**Dog Collars—See Collars, Dog.**

**Door Checks—**  
See Checks, Door.

**Door Springs—**  
See Springs, Door.

**Doors, Screen—**  
Porter's Plain, No. 6 ..... \$ doz. \$6.50  
Porter's Ornamental, No. 10, per doz. \$10.00

**Drawers, Money—**  
Tucker's Pat. Alarm Till No. 1, per doz. \$18; No. 2, \$15; No. 3, \$12; No. 4, \$18.

**Drawing Knives—**  
See Knives, Drawing.

**Drills and Drill Stocks—**  
Common Blacksmiths' Drill, each \$1.50@1.75  
Blacksmiths' Self-feeding, each \$3.75@4.00  
Breast, Millers Falls, each \$3.00, 15c10c  
Breast, P. S. & W. ..... 40c40c55c  
Goodell Automatic Drills, 40c50c10c  
Huns' Automatic Drills Nos. 2 and 3 ..... 15c  
Johnson's Drill Points ..... 25c10c  
Ratchet, Curtis & Curtis ..... 25c  
Ratchet, Parker's ..... 40c  
Ratchet, Weston's, P. S. & W. ..... 30c25c  
Ratchet, Whitney's, P. S. & W. ..... 50c  
Whitney's Hand Drill, No. 1, \$10.00; Adjustable, No. 10, \$12.00 ..... 33c

**Twist Drill—**  
Standard List ..... 60c50@60c10c

**Drill Bits or Bit Stock**  
Drills—See Augers and Bits.

**Dripping Pans—**  
See Pans, Dripping.

**Drivers, Screw—**  
Screw Driver Bits ..... per doz. 45c70c  
Balsey's Screw Holder and Driver, per doz. 9c10c; 4 in. \$7.30 6 in. \$9.40  
Buck Bros. ..... 30c  
Buck Bros' Screw Driver Bits ..... 30c  
Champion ..... 40c10c  
Douglass Mfg. Co. ..... 30c20c10c  
Fray's Hot, Hildie Sets, No. 3, \$12.00 50c  
Gay's Double Action Ratchet ..... 25c  
Goodell's Automatic ..... 50c10c50c10c55c  
Mayhew's Black Handle ..... 50c  
Mayhew's Monarch ..... 40c10c  
New England Specialty Co. ..... 50c10c  
Sargent & Co.'s:  
Nos. 1, 50c55c and 60c ..... 50c10c10c  
Nos. 20 and 40 ..... 65c10c  
Smith & Hearnway ..... 60c55c  
Stanley's R. & L. Co.'s:  
No. 64, Varnished Handles 70c10c10c  
No. 88 ..... 70c70c10c10c  
Swan's:  
Nos. 85 to 88 ..... 50c  
No. 4 ..... 40c10c  
Nos. 25, 35 and 45 ..... 40c10c10c

**Eave Trough Galvanized**  
Territory, L. C. L.  
Eastern ..... 75c10c10c  
Central ..... 75c10c10c  
Southern ..... 70c75c10c  
S. Western ..... 70c10c10c  
Terms, 25 for cash.  
See also Conductor Pipe and Elbows.

**Egg Beaters—See Beaters, Egg**

**Egg Openers—**  
See Openers, Egg.

**Elbows and Shoes—**  
Factory shipments ..... 5c  
Perfect Elbows (S. S. & Co.) ..... 50c

**Emery, Turkish—**  
4 to 5 8 to 10 150 Flour  
Kegs ..... lb. 5c 5 1/2c 5 3/4c 5 1/2c  
Kegs ..... lb. 5c 5 1/2c 5 3/4c 5 1/2c  
10-lb cans, 10 in case 6 1/2c 7c 6c  
10-lb cans, less than 10 lb. 10c 10c  
Note:—In lots 1 to 3 tons a discount of 10% is given.

**Enameled and Tinned Ware—See Ware, Hollow.**

**Escutcheon Pins—**  
See Pins, Escutcheon.

**Extractors, Lemon Juice—**  
See Squeezers, Lemon.

**Fasteners, Blind—**  
Zimmerman's ..... 50c10c

**Faucets—**  
Cork lined ..... 70c50@70c10c55c  
Metallic Key, Leather Lined ..... 70c10c  
Red Cedar ..... 70c10c  
B. & L. B. Co.:  
Lockport, Metal Plug, reduced list 40c55c  
Star ..... 60c60c55c  
Star, Metal Plug new list ..... 40c40c55c  
West's Lock, Open and Shut Key 50c10c  
John Sommer's Fearless Tin Key ..... 50c  
John Sommer's Boss Tin Key ..... 50c  
John Sommer's Victor Metal Key 50c10c  
John Sommer's Duplex Metal Key ..... 60c  
John Sommer's Diamond Lock ..... 50c  
John Sommer's L. X. L. Cork Lined ..... 50c  
John Sommer's Reliable Cork Lined ..... 50c10c

**John Sommer's Chicago Cork Lined, 50c**  
John Sommer's O. K. Cork Lined ..... 50c  
John Sommer's No Br n'l, Cedar ..... 40c  
John Sommer's Perfection Cedar ..... 40c  
McKenna, Brass:  
Burglar Proof, N. P. ..... 35c  
Improved, 3/4 and 1 1/2 inch ..... 35c

**Self Measuring:**  
Enterprise, per doz. \$60.00 ..... 40c10c  
Lane's, per doz. \$38.00 ..... 40c10c  
National Measuring, per doz. \$60.00 ..... 40c

**Felice Plates—**  
See Plates, Felice.

**Files—Domestic—**  
Last revised Nov. 1, 1898.  
Best Brands ..... 70c50@70c10c  
Standard Brands ..... 75c10c10c  
Second Quality ..... 75c10c10c

**Imported—**  
Stubs' Tapers, Stubs' list, July 2, '97 ..... 25c

**Fixtures, Grindstones—**  
Net Prices:  
Inch ..... 15 17 19 21 24  
Per doz. \$3.60 3.75 3.90 4.10 4.40  
P. S. & W. Co. ..... 50c50c55c  
Reeling Hardware Co. ..... 35c  
Sargent's ..... 60c10c10c  
Stowell's Giant Grindstone Hanger ..... 40c  
Stowell's Grindstone Fixtures, Extra Heavy ..... 50c10c10c  
Stowell's Grindstone Fixtures, Light ..... 40c

**Fodder Squeezers—**  
See Compressors.

**Forks—**  
Sept. 1, 1900, list.  
Grain or Barley Forks, 16 to 20 inches ..... 70c50c  
Hay, 3 tine ..... 65c  
Hay, 3 tine ..... 60c  
Hay, 4 tine, Header and Barley Forks, 15 to 18 inches ..... 60c  
Manure, 4 tine ..... 70c  
Manure, 5 and 6 tine ..... 70c  
Spading ..... 70c50c

**Iowa Dig-Easy Potato ..... 65c**  
Victor, Hay ..... 60c  
Victor, Manure ..... 70c  
Victor, Header ..... 60c50c  
Champion, Manure ..... 60c  
Champion, Manure ..... 70c  
Columbia, Hay ..... 60c55c  
Columbia, Manure ..... 70c  
Columbia, Spading ..... 70c  
Hawkeye Wood Parley 4 tine per doz. \$3.00; 6 tine, \$3.00.  
W. & C. Potato Digger ..... 65c  
Acme Hay ..... 60c10c75c  
Acme Manure, 4 tine ..... 60c90c10c  
Acme Manure, 6 tine ..... 60c10c90c  
Dakota Header ..... 65c15c  
Jackson Steel Parley ..... 65c15c  
Kansas Header ..... 60c  
W. & C. Favorite Wood Parley 4 tine, per doz. \$3.00; 6 tine, \$3.00.  
Plated—See Spoons.

**Frames—Saw—**  
Red, Polished and Varnished, per doz. \$1.15@1.30  
White ..... 1.15@1.30

**Screens and Frames—**  
See Screens.

**Freezers, Ice Cream—**  
Qts. ..... 3 4 5 6 8 10  
Best, \$1.15 1.65 1.95 2.40 3.20 4.30  
Good \$1.25 1.40 1.70 2.15 2.75 3.75  
Fair, \$1.00 1.10 1.50 1.75 2.50 3.50

**Fruit and Jelly Presses—**  
See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.**

**Fuse—**  
Per 1000 feet.  
Hemp Fuse ..... \$5.00  
Cotton Fuse ..... 5.00  
Single Taped Fuse ..... 5.50  
Double Taped Fuse ..... 6.50  
Triple Taped Fuse ..... 8.00



## Gates, Molasses and Oil

**Gauges**  
Marking, Mortise, &c.  
Garrett's Comb. Roller Gauge  
Stanley R. & L. Co.'s Butt & Banbet Gauge  
Wire, Brown & Sharpe's  
Wire, Morse's  
Wire P. & W. Co.  
**Gimlets—Single Cut**  
Nail, Metal, Assorted, gro. \$1.40 to \$1.60  
Spike, Metal, Assorted, gro. \$2.30 to \$2.35  
Nail, Wood Handled, Assorted, gro. \$1.75 to \$2.00  
Spike, Wood Handled, Assorted, gro. \$2.35 to \$2.60

**Glass, American Window**  
Cobbers' List, Jan. 21, 1901  
From store ..... 70¢ to 10¢  
F. O. B. factory, carload lots:  
Single strength ..... 90¢ to 10¢  
Double strength ..... 90¢ to 10¢  
**Glue—Liquid, Fish**  
List A, Bottles or Cans, with Brush  
List B, Cans (1/4 pts., pts., qts.)  
List C, Cans (1/4 gal., gal.)  
International Glue Co. (Martin's)  
4 to 10 to 25%

**Glue Pots—See Pots, Glue**  
**Grease, Axle**  
Common Grade ..... gro. \$5.00 to \$6.00  
Dixon's Everlasting ..... 10-m pails, ea. \$5.00  
Dixon's Everlasting, in bxs., per doz. 1 m  
Snow Flake:  
1 qt. cans, per doz. \$2.00; 2 qt., \$3.20;  
1 gal. cans, per doz. \$6.00; 3 gal., \$24.00

**Grindstones**  
Buy to Entry Grindstone ..... \$6.50  
Bicycle Grindstones, each ..... \$2.50 to \$3.00  
Pike Mfg. Co.  
Improved Family Grindstone: ea.  
per inch, per doz. \$2.00 (83¢)  
Pike Mower Knife and Tool  
Grinder, each ..... \$9.00  
Velox Ball Bearing, mounted, Angle  
Iron Frames ..... each, \$3.25

**Guards Snow**  
Cave and Wire Hanging Co.:  
Galv. Steel #1000 ..... \$9.00  
Copper #1000 ..... \$18.00  
**Gun Powder—See Powder**  
**Hack Saws—See Saws**  
**Hafts Awl**  
Peg Patent, Leather Top ..... \$4.50 to \$5.25  
Peg Patent, Plain Top ..... \$3.50 to \$3.75  
Sewing, Brass Ferrule ..... \$1.50 to \$1.80  
Saddlers', Brass Ferrule ..... \$1.25 to \$1.45  
Sag, Common ..... \$1.25 to \$1.35  
Brad, Common ..... \$1.50 to \$1.75

**Halters and Ties**  
Web  
Jute Rope  
Sisal Rope  
Covert's Saddlery Works:  
Web and Leather Halters ..... 70¢  
Jute and Manila Rope Halters ..... 70¢  
Sisal Rope Halters ..... 70¢  
Jute, Manila and Cotton Rope Ties ..... 70¢  
Sisal Rope Ties ..... 60¢ to 70¢

**Hammers**  
Handled Hammers—  
Heller's Machinists ..... 50¢ to 50¢  
Heller's Farriers ..... 50¢ to 50¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

**Handled Hammers**  
Heller's Machinists ..... 50¢ to 50¢  
Heller's Farriers ..... 50¢ to 50¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

**Handled Hammers**  
Heller's Machinists ..... 50¢ to 50¢  
Heller's Farriers ..... 50¢ to 50¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229,

**Ladies' Melting—**  
L. & W. Mfg. Co. .... 25%  
P. S. & W. .... 50%  
Reading ..... 60%  
Sargent's ..... 40% & 10%

**Lanterns—Tubular—**  
Regular 14x14 in. .... doz. \$1.50 @ 1.75  
Lift Tubular ..... doz. \$1.75 @ 2.25  
Hinge Tubular ..... doz. \$1.75 @ 2.25  
Other Styles ..... doz. \$1.75 @ 2.25

**Bull's Eye Police—**  
No. 1, 2 1/2 inch ..... \$3.00  
No. 2, 3 inch ..... \$4.00

**Latches, Thumb—**  
Roggin's Latches ..... doz. 30 @ 35c

**Lawn Mowers—**  
See Mowers, Lawn.

**Leaders Cattle—**  
Small ..... doz. 50c; large, 55c  
Covert Mfg. Co. .... 45c & 25c

**Lemon Squeezers—**  
See Squeezers, Lemon.

**Lifters, Transom—**  
Gold strip, Kayson Mfg. Co. .... 80%  
R. & E. .... 45%

**Lines—**  
Wire Clothes, Nos. 13 19 30  
100 feet ..... \$3.20 1.00 1.65  
75 feet ..... \$1.80 1.70 1.30

**Casawan Mills—**  
Crown Solid Braided Chalk ..... 33c & 45c  
Mason's, No. 0 to No. 5 ..... 33c & 45c  
Samson Cordage Works ..... 40c  
Solid Braided Chalk, No. 0 to 5 ..... 40c  
Silver Lake Braided Chalk, No. 0, \$6.00;  
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50  
✓ gr. .... 80%

**Locks—Cabinet—**  
Cabinet Locks ..... 35c @ 35c & 75c  
Door Locks, Latches, &c.—  
(Net prices are very often made on these goods.)  
Reading Hardware Co. .... 50%  
R. & E. Mfg. Co. .... 50%  
Sargent & Co. .... 40 @ 40 & 10%

**Elevator—**  
Stowell's ..... 40%

**Padlocks—**  
Wrought Iron ..... 7c @ 10c @ 50c & 55c  
R. & E. Mfg. Co. Wrt. Steel and Brass 50%  
Sash, &c.—

**Fitch's—**  
Bronze and Brass ..... 60c & 70c  
Iron ..... 70c  
Ives' Patent ..... 60c & 70c  
Bronze and Brass ..... 60c & 70c  
Iron ..... 60c & 70c  
Wrought Steel ..... 60c & 70c  
Payson's signal ..... 50c  
Reading ..... 60c @ 10c @ 10c @ 70c

**Machines—Boring—**  
Common, Upright, Without Augers, \$2.00  
Common, Angular, Without Augers, \$2.25  
Without Augers.  
R. & E. Mfg. Co.: Upright, Angular.  
Improved No. 3, \$4.25 No. 1, \$5.00  
Improved No. 4, \$7.75 No. 2, \$8.58  
Improved No. 5, 2.50  
Jennings' ..... 2.50  
Miller's Falls ..... 5.75  
Smith's, Rice's Pat. 2.50  
Swan's, No. 500 ..... 5.10 No. 900 6.45

**Hoisting—**  
Moore's Anti-Friction Differential Pulley Block ..... 30%  
Moore's Hand Hoist, with Lock Brake 30%  
Moore's Portable Pneumatic Hoist ..... 25%

**Ice Cutting—**  
Chandler's ..... 15%

**Washing—**  
Wayne American ..... doz. \$23.00  
Western Star, No. 3 ..... doz. \$23.00  
Western Star, No. 8 ..... doz. \$20.00  
St. Louis, No. 41 ..... doz. \$20.00

**Mallets—**  
Hickory ..... 45c @ 50c  
Lignumvitae ..... 45c @ 50c  
Timbers', Hickory and Applewood, doz. .... 60 @ 55c

**Mat—Door—**  
Elastic Steel (W. G. Co.) ..... 10%

**Mattocks—**  
See Picks and Mattocks.

**Meat Cutters—**  
See Cutters, Meat.

**Milk Cans—See Cans, Milk.**

**Mills—Coffee—**  
Enterprise Mfg. Co. .... 35 @ 30%  
National, list Jan. 1, '04 ..... 30%  
Parker's Columbia and Victor ..... 30%

**Parker's Box and Side—**  
50c @ 10c @ 60c  
Swift, Lane Bros. .... 30%

**Mincing Knives—**  
See Knives, Mincing.

**Molasses Cates—**  
See Cates, Molasses.

**Money Drawers—**  
See Drawers, Money.

**Mowers Lawn—**  
Net prices are generally quoted.  
Cheap ..... all sizes, \$1.50 @ 1.95  
Good ..... all sizes, \$2.50 @ 3.00  
10 12 14 16-inch  
High Grade 1.50 4.50 4.75 5.00  
Continental ..... 70c & 85c  
Great American ..... 70c & 85c  
Great American Ball Bearing ..... 60c @ 10c & 50c  
Quaker City ..... 70c & 85c  
Pennsylvania ..... 60c @ 10c & 50c  
Pennsylvania Golf ..... 30c  
Pennsylvania Horse ..... 40c  
Pennsylvania Pony ..... 45c  
Philadelphia  
Styles M., R. C. K. T. .... 70c & 85c  
Style A, all Steel ..... 60c @ 10c  
Style E, Low Wheel ..... 60c @ 10c  
Style E, High Wheel ..... 70c @ 10c & 50c  
Drexel and Gold Coin, low list ..... 50c & 55c

**Nails—**  
Out and Wire. See Trade Report.  
Wire Nails and Brads, Pinned.  
List July 10, 1899. 55c @ 10c @ 55c @ 10c @ 10%

**Hungarian, Finishing, Upholsterers', &c. See Tacks.**

**Horse—**  
Nos. 6 7 8 9 10  
A. O. .... 25c 25c 25c 25c 25c  
Ausable ..... 25c 25c 25c 25c 25c  
C. B. K. .... 25c 25c 25c 25c 25c  
Champion ..... 25c 25c 25c 25c 25c  
Clinton ..... 15c 17c 19c 15c 14c  
Maud S. .... 25c 25c 25c 25c 25c  
Putnam ..... 25c 25c 25c 25c 25c  
Vulcan ..... 25c 25c 25c 25c 25c  
Americus, Nos. 5 to 10 ✓ gr. 50c & 55c  
Neponset ..... Nos. 5 to 10 ✓ gr. 12c  
Jobbers' special brands, per lb. 8 @ 9c

**Picture—**  
Brass Head, 1 1/2 2 3/4 3 3 1/2 in.  
Por. Head, 1 1/2 1.10 1.10 1.10 gro.  
✓ gr. 1.10 1.10 1.10 1.10

**Nippers, See Pliers and Nippers.**

**Nut Crackers—**  
See Crackers, Nut.

**Nuts—**  
Cold Punched: Off list.  
Mfrs. or U. S. Standard.  
Square, plain, ..... \$5.00 @ 5.10  
Hexagon, plain, ..... \$5.00 @ 5.10  
Square, C. T. & R. .... \$5.00 @ 5.10  
Hexagon, C. T. & R. .... \$5.00 @ 5.10  
Hot Pressed:  
Mfrs., U. S. or Nar. Gauge Stand.  
Square Blank ..... \$5.00 @ 5.10  
Hexagon Blank ..... \$5.00 @ 5.10  
Square Tapped ..... \$5.00 @ 5.10  
Hexagon Tapped ..... \$5.00 @ 5.10

**Oakum—**  
Best or Government ..... lb. 6 1/4c  
Navy ..... lb. 6 c  
U. S. Navy ..... lb. 6 1/4c  
Plumbers' Spun Oakum ..... 5 1/4c  
In carload lots 1/2 lb. off f.o.b. New York.

**Oil Axle—**  
Snow Flake ..... 3 1/2c  
1 qt. cans, per doz. .... \$3.00  
1 gal. cans, per doz. .... \$4.80  
5 gal. cans, per doz. .... \$15.00

**Oil Tanks—See Tanks, Oil.**

**Oilers—**  
Brass and Copper ..... 40c @ 10c  
Tin or Steel ..... 60c @ 10c  
Zinc ..... 60c @ 10c

**Paragon—**  
Brass and Copper ..... 40c @ 10c  
Tin or Steel ..... 60c @ 10c  
Zinc ..... 60c @ 10c

**Malleable Hammers' Improved, No. 1, \$3.00; No. 2, \$4; No. 3, \$4.40 per doz. 20%  
Malleable, Hammers' Old Pattern, same list ..... 50c @ 10c  
Wilmet & Hobbs Mfg. Co.:  
Spring Bottom Cans ..... 70c @ 10c  
Railroad Oilers etc. .... 60c @ 10c**

**Opener—Can—**  
French ..... doz. 55c  
Iron Handle ..... doz. 55c @ 70c  
Sprague, Iron Handle, per doz. 35 @ 40c  
Sardine Scissors, per doz. \$1.75 @ 3.00  
Tip Top ..... per doz. \$0.75  
National, ✓ gr. .... \$1.75 @ 3.00  
Stowell's ..... per doz. 35 @ 45c  
Waldorf, ✓ gr. .... 85c

**Egg—**  
Nickel Plate ..... per doz., \$2.25  
Silver Plate ..... per doz., \$3.50

**Packing—**  
Asbestos Packing, Wick and Rope, 15 @ 15 1/2 lb.

**Rubber—**  
Sheet, C. I. .... 8 @ 12c  
Sheet, C. O. S. .... 9 @ 12c  
Sheet, C. B. S. .... 10 @ 12c  
Sheet, Pure Gum ..... 30 @ 70c  
Sh. et. Red ..... 35 @ 40c  
Jenkins' Standard, ✓ gr. 50c ..... 25 @ 35c

**Miscellaneous—**  
American Packing ..... 7 @ 10c lb.  
Cotton Packing ..... 15 @ 14c lb.  
Italian Packing ..... 9 @ 12c lb.  
Jute ..... 3 1/2 @ 4c lb.  
Russia Packing ..... 7 @ 11c lb.

**Pails—Creamery**  
R. & E. Co. with gauges, No. 1 \$0.50;  
No. 2, \$3.75 ✓ doz.

**Galvanized—**  
Price per doz.  
Quart. .... 10 19 14  
Water, Regular ..... 1.80 2.00 2.25  
Water, Heavy ..... 3.40 3.60 3.80  
Fire, Rd. Bottom ..... 2.25 3.00  
Well ..... 2.80 3.00

**Pans—Dripping—**  
Standard List ..... 50c @ 10c @ 50c @ 10c

**Fry—**  
Common Lipped:  
No. 1 2 3 4 5  
Per doz. \$0.80 .75 .85 .95 1.15  
Roasting and Baking—  
Regal, S. S. & Co., ✓ doz. Nos. 5, \$4.50;  
10 \$5.00; 20 \$5.50; 30 \$6.00  
Simplex, ✓ doz. No. 40 \$30.00; 50, \$32.50; 60 \$35.00; 140, \$38.00; 150, \$37.50; 160, \$43.00.

**Paper—Building Paper—**  
Asbestos ..... lb.  
Building Felt ..... 3c  
Mill Board, sheet, 40 x 40 inches, 4c  
Mill Board, roll, thicker than 1-16 inch, 3c  
Mill Board, roll, 1-16 in. thick and less ..... 3c

**Rosin Sized Sheathing: Per roll**  
Light wt., 30 lbs. to roll ..... \$0.25  
Medium wt., 30 lbs. to roll ..... \$0.27  
Heavy wt., 40 lbs. to roll ..... \$0.33  
Medium Grades Water Proof Sheathing ..... \$0.65 @ 1.25  
Deafening Felt, 2, 3 and 1 1/2 sq. ft. to lb., ton ..... \$10.00 @ 15.00

**Red Rope Roofing, 250 sq. feet per roll, ..... \$1.65**  
NOTE.—These goods are often sold at delivered prices.

**Tarred Paper.**  
1 ply (roll 300 sq. ft.), ton ..... \$28.00 @ 30.00  
2 ply, roll 103 sq. ft. .... 40 @ 45c  
3 ply, roll 103 sq. ft. .... 60 @ 65c  
Sister's Felt (roll 500 sq. ft.), 50 @ 60c  
NOTE.—Above prices often include delivery.

**K. R. M. Stone Surfact Roofing (roll 110 sq. ft.) ..... \$2.75**

**Sand and Emery—**  
List Dec. 23, 1899 ..... 60 @ 60c @ 10%

**Parers—Apple—**  
Advance ..... ✓ doz. \$4.50  
Baldwin ..... ✓ doz. \$5.00  
Bonanza ..... each \$7.50  
Eureka, 1895 ..... each \$15.00  
Family Bay State ..... ✓ doz. \$12.00  
Hudson's Little Star ..... ✓ doz. \$4.00  
Hudson's Rocking Table ..... ✓ doz. \$5.50  
Improved Bay State ✓ doz. \$27.00 @ 30.00  
New Lightning ..... ✓ doz. \$5.50  
Reading 78 ..... ✓ doz. \$4.00  
Turn Table 94 ..... ✓ doz. \$5.50  
White Mountain ..... ✓ doz. \$4.00

**Potato—**  
Saratoga ..... ✓ doz. \$5.50  
White Mountain ..... ✓ doz. \$4.50

**Paris Green—**  
Arsenic kegs or casks ..... 11 @ 13 c  
Kits, 14, 28, 56 lbs. .... 15c @ 13c  
Paper boxes, 2 to 5 lb. .... 15c @ 13c  
Paper boxes, 1 lb. .... 15c @ 13c  
Paper boxes, 1/2 lb. .... 15c @ 13c  
Paper boxes, 1/4 lb. .... 15c @ 13c

**Picks and Mattocks—**  
List Feb. 13, 1899 ..... 70 @ 70c @ 10%

**Pigeons—Clay**  
Markle's Black Birds, f.o.b. factory, per set ..... \$3.75  
See also Traps, Target.

**Pinking Irons—**  
See Irons, Pinking.

**Pins—Escutcheon—**  
Brass ..... 60%  
Iron, list Nov. 11, '85 ..... 60%

**Pipe, Cast Iron Soil—**  
Standard, 2-6 in. .... 60c @ 7 1/2c  
Extra Heavy, 2-6 in. .... 70c  
Fittings ..... 75c @ 55c

**Pipe, Merchant, Boiler Tubes, &c.—**  
Black, Galva- nized  
1/2 to 1 1/2 inch ..... 61% 43%  
3/4 to 10 inch ..... 63% 56%  
Boiler Tubes ..... Up to 22 feet.

**Pipe Sewer—**  
Standard Pipe and Fittings, 2 to 24 in.  
New England ..... 70%  
New York and New Jersey ..... 75%  
Ohio and Michigan ..... 80%  
Carload lots are generally delivered.

**Planes and Plane Irons—**  
Wood Planes—  
Molding ..... 40c @ 10c @ 40c @ 10c  
Bench, First quality 1 1/2 @ 10 @ 15 @ 10c @ 5c  
Bench, Second qual. 60c @ 10 @ 50c @ 10c @ 5c  
Bailey's (Stanley R. & L. Co.) 25 @ 10 @ 25 @ 10 @ 10%

**Gage Self Setting ..... 35c**  
Bailey's (Stanley R. & L. Co.) 25 @ 10 @ 25 @ 10 @ 10%

**Chaplin's Iron Planes—**  
Miscellaneous Planes (Stanley R. & L. Co.) 25 @ 10 @ 25 @ 10 @ 10%

**Sargent's ..... 50c @ 10c @ 10%**

**Plane Irons—**  
Wood Bench Plane Irons—  
30c @ 50c @ 10c @ 5c  
Buck Bros. .... 30c  
Stanley R. & L. Co. 20 @ 10 @ 20 @ 10 @ 10%  
L. & J. White ..... 30c @ 25c

**Platers, Cern, Hand—**  
Kohler's Eclipse ..... ✓ doz. \$0.00

**Plates—**  
Felloe ..... lb. 3 1/2 @ 4c  
Self-Sealing Pie Plates (S. S. & Co.), ✓ doz. \$2.00

**Pliers and Nippers—**  
Button Pliers ..... 70c @ 10c @ 75c  
Gas Burner, per doz., 5 in., \$1.15 @ \$1.20; 6 in., \$1.35 @ \$1.45  
Gas Pipe, 7 8 10 12-in. \$1.75 \$2.00 \$2.75 \$3.75  
Acme Nippers ..... 60 @ 50c & 35c  
Bernard's:  
Parallel Pliers, 20 ..... 35c  
Paragon Pliers ..... 50c & 35c  
Lodi Pliers ..... 50c & 35c  
Elm City Fence Pliers ..... 35c  
Cronk Hanger Co.:  
American Button ..... 75c @ 10c  
Cronk's ..... 60c  
Improved Button ..... 70c @ 10c  
Stub's Pattern ..... 50c  
Combination and others ..... 35c  
Heller's Farriers' Nippers, Pincers and Tools 50 @ 50c & 35c  
P. S. & W. Tanners' Cutting Nippers, 30 @ 30c @ 10c

**Swedish Side, End and Diagonal Cutting Pliers ..... 60%**  
Utica Drop Forge & Tool Co. .... 60%

**Pliers and Nippers, all kinds ..... 40%**

**Plumbs and Levels—**  
Plumbs and Levels ..... 75c @ 75c @ 10c  
Davis Iron, Machinist No. 1 to 14 ..... 90c  
Davis Iron, Adjustable Nos. 5 to 40 ..... 35c  
Disston's ..... 70c  
Pocket Levels ..... 75c @ 10c @ 75c @ 10c

**Stanley R. & L. Co. .... 40 @ 40c @ 10c**  
Stanley's Duplex ..... 30 @ 30c @ 10c  
Woods' Extension ..... 35 @ 35c

**Poachers, Egg—**  
Buffalo Steam Egg Poachers, ✓ doz. No. 1, \$7.20; No. 2, \$11.00 No. 3, \$11.00; No. 4, \$14.50 ..... 50c

**Points, Glaziers—**  
Bulk and 1 lb. papers, lb. 8 c @ 1/4-lb. papers ..... lb. 8c @ 1/4-lb. papers ..... lb. 9 c @

**Pokes, Animal—**  
Ft. Madison Hawkeye ..... ✓ doz. \$3.25  
Ft. Madison, Western ..... ✓ doz. \$3.75

**Police Goods—**  
Manufacturers' Lists ..... 35 @ 35c & 25c  
Tower's ..... 25c

**Polish—Metal—**  
Prestolite Liquid, No. 1 (1/2 pt.), ✓ doz. \$3.00; No. 2 (1 qt.), \$0.75 ..... 40c  
Prestolite Paste ..... 40c @ 10c  
George William Hoffman:  
U. S. Metal Polish Paste, 3 oz. boxes, ✓ doz. 50c; 5 oz. boxes, ✓ doz. \$2.50; 1 lb. boxes, ✓ doz. \$2.25  
U. S. Liquid, 8 oz. cans, ✓ doz. \$1.95; ✓ gr. \$12.00  
Barkeepers' Friend Metal Polish, ✓ doz. \$1.75; ✓ gr. \$18.00  
Wynn's White Silk, 1/2 pt. cans, ✓ doz. \$2.00

**Stove—**  
Black Eagle Benzine Paste, 5 lb. cans ..... 10c  
Black Eagle, Liquid, 1/2 pt. cans ..... 10c  
Black Jack Paste, 1/2 lb. cans, ✓ doz. 75c  
Ladd's Black Beauty, gr. \$10.00 ..... 50c  
Joseph Dixon's, ✓ gr. \$5.75 ..... 10c  
Dixon's Plumbago ..... ✓ gr. \$2.50  
Firestone ..... ✓ gr. \$2.50  
Gem, ✓ gr. \$4.50 ..... 10c  
Japanese ..... ✓ gr. \$3.50  
Jet Black ..... ✓ gr. \$3.50  
Peerless Iron Enamel, 1/2 pt. cans, ✓ doz. \$1.50

**Wynn's:**  
Black Silk, 5 lb. pail ..... each 70c  
Black Silk, 1/2 lb. box ..... ✓ doz. \$1.00  
Black Silk, 5 oz. box ..... ✓ doz. \$0.75  
Black Silk, 1/2 pt. liq. ..... ✓ doz. \$1.00

**Poppers, Corn—**  
Round or Square:  
1 qt. ..... gro. \$7.00 @ 37.50  
1 1/2 qt. ..... gro. 9 50 @ 10.00  
3 qt. ..... gro. 10 50 @ 11.00

**Post Hole and Tree Augers and Diggers—**  
See also Diggers, Post Hole, &c.

**Potato Parers—**  
See Parers, Potato.

**Pots—Glue—**  
Enameled ..... 45%  
Tinned ..... 40%

**Powder—**  
In Canisters:  
Duck, 1 lb. each ..... 45c  
Fine Sporting, 1 lb. each ..... 75c  
Rifle, 1/2 lb. each ..... 15c  
Rifle, 1-lb. each ..... 25c

**In Kegs—**  
Duck, 6 1/2-lb. kegs ..... \$3.25  
Duck, 12 1/2-lb. kegs ..... \$4.25  
Duck, 25-lb. kegs ..... \$5.00  
Rifle, 6 1/2-lb. kegs ..... \$3.25  
Rifle, 12 1/2-lb. kegs ..... \$4.25  
Rifle, 25-lb. kegs ..... \$5.00

**King's Semi-Smokeless:**  
Keg (25 lb. bulk) ..... \$0.50  
Half Keg (12 1/2 lb. bulk) ..... \$3.50  
Quarter Keg (6 1/2 lb. bulk) ..... \$1.00  
Case 24 (1 lb. cans bulk) ..... \$8.50  
Half case (1 lb. cans bulk) ..... \$4.25  
King's Smokeless Shot Gun Rifle Keg (25 lb. bulk) ..... \$12.00 \$15.00  
Half Keg (12 1/2 lb. bulk) 6.25 7.75  
Quarter Keg (6 1/2 lb. bulk) 3.25 4.00  
Case 24 (1 lb. cans bulk) 14.00 17.00  
Half case (1 lb. cans bulk) 7.25 8.75

**Presses—**  
**Fruit and Jelly—**  
Enterprise Mfg. Co. .... 20 @ 35c  
**Seal Presses—**  
Morrell's No. 1, per doz. \$20.00 ..... 50c  
Morrell's No. 2, per doz. \$22.50 ..... 50c

**Pruning Hooks and Shears—See Shears.**

**Pulleys, Nail—**  
Cyclops ..... 40 @ 40c @ 10c  
Miller's Falls, No. 3, per doz. \$12.00 ..... 15c @ 10c

**Pearson No. 1, Cyclops Spoke Puller, each \$50.00 ..... 50%**  
Pelican, ✓ doz. \$0.00 ..... 40 @ 10c  
Samson ..... ✓ doz. \$18.00  
Beranton Cast  
No. 1 (large), ✓ doz. \$5.50; No. 2 (large), \$5.75; No. 3 (small), \$5.00; No. 3-B (large), \$5.50; No. 3-B (small), \$5.00; No. 3-D (large), \$4.50; No. 3-D (small) \$4.00.  
Smith & Hemenway Co.:  
Diamond B. No. 3, case lots, ✓ doz. \$5.50  
Diamond B. No. 1, ✓ doz. \$18; No. 2, \$11.50; No. 3, \$15 ..... 40%

**Pulleys—Single Wheel—**  
Avening ..... 2 1/2 3 4 5  
Avening, ✓ doz. \$0.45 .70 .95  
Avening, ✓ doz. \$1.35 1.60 1.90  
Hay Fork, Shovel or Solid Eye ..... 1 1/2 1 3/4 1 1/2 1 3/4  
Hot House, doz. \$0.65 .90 1.20  
Inch ..... 1 1/2 1 3/4 1 1/2 1 3/4  
Screw, ✓ doz. \$0.15 .30 .35 .30  
Inch ..... 1 1/2 1 3/4 1 1/2 1 3/4  
Side, ✓ doz. \$0.30 .40 .55 .60  
Inch ..... 1 1/2 1 3/4 1 1/2 1 3/4  
Tackle, ✓ doz. \$0.30 .45 .65 1.10  
Stowell's:  
Ceiling or End, Anti-Friction ..... 60c  
Dumb Walter, Anti-Friction, 60c @ 10c  
Hay Fork, Anti-Friction, 5-lb. Wheel, ✓ doz. \$12.00 ..... 50c  
Electric Light ..... 60c  
Side, Anti-Friction ..... 60c @ 10c

**Sash Pulleys—**  
Common Frame: Square or Round  
End per doz., 1 1/2 in., 12c; 2 in., 15c  
Auger Mortise, no Face Plate, per doz. 1 1/2 in., 12c; 2 in., 15c  
Auger Mortise, with Face Plate, per doz., 1 1/2 in., 12c; 2 in., 15c.



**Shovels and Spades—**  
 Association list.....40%  
 Note.—Common Plain Back Shovels are  
 generally sold by jobbers at \$6.75@7.00.

**Sieves and Sifters—**

Hunter's Imitation, gro. \$11.00 to \$11.50  
 Buffalo Metallic Blued, S. S. & Co., gr. 14 & 16 108.15 182.20  
 Y&B 90 \$12.30 \$15.00  
**F. J. Meyers' Mfg. Co.:**  
 Electric Light, gr. \$11.00  
 Hunter's Genuine, gr. \$12.50  
 No Name, Hunter's, gr. \$11.00  
 Standard, gr. \$11.00  
 Shaker (Barley's Pat.) Flour Sifters, gr. doz. \$2.00 \$3.00 \$4.00

**Sieves, Tin Rim—**

Per dozen  
 Mesh, 14, 16, 18, 20  
 Black, full size, \$0.95 .98 1.00 1.10  
 Plated, full size, \$1.05 1.03 1.10 1.20  
 Black, scant, \$0.78 .80 .83

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 inch.  
 Mesh 18, Nested, doz. \$0.65 to \$0.75  
 Mesh 20, Nested, doz. .75 to .85  
 Mesh 24, Nested, doz. .90 to 1.00

**Sinks—Cast Iron—**

Standard list \$65 to \$70  
 NOTE.—There is not entire uniformity in size used by jobbers.

**Wrought Steel—**

New Era, Galv'd and Enamelled, 70 & 55  
 New Era, Painted, 50 & 105  
 L. & G. Mfg. Co., Galvanized, 50%  
 L. & G. Mfg. Co., Enamelled, 50%

**Skeins, Wagon—**

Cast Iron, 70 & 10 to 75%  
 Malleable Iron, 40 & 10 to 50%  
 Steel, 40 & 10 to 10%

**Slates—**

Factory Shipments.  
 "D" Slates, 50 & 10 to 10%  
 Unexcelled, etc., Noiseless Slates, 60 & 3 tens & 5

Victoria, etc., Noiseless Slates, 60 & 7 tens & 5  
 Wire Bound, 50 & 10 to 5%  
 Web Hinge, 50 & 10 to 5%

**Slaw Cutters—See Cutters.**

Slicers, Vegetable—  
 Sterling \$2.00 \$3.34  
**Snap, Harness—**

German, 40 & 10 to 10%  
 Covert Mfg. Co., 35 & 25

Derby, 45 & 25  
 Jockey, 45 & 25  
 Trojans, 45 & 25  
 Yankee, 35 & 25  
 Yankee, Roller, 30 & 25

**Covert's Sundry Works:**

Crown, 60%  
 German, 60%  
 Model, 60%  
 Triumph, 60%  
**W. & E. T. Fitch Co.:**

Bristol, 40 & 10%  
 Empire, 50 & 35%  
 German, 40 & 10%  
 National, 50 & 35%  
 Perfect, 45%  
 Clipper, 60 & 35%  
 Champion, 40%  
 Security, 40%  
 Victor, 60 & 35%

Oneda Community:  
 Solid Steel, 65 & 65 & 10%  
 Solid Steel, 65 & 10 to 65 & 10%  
 Sargent's Patent Guarded, 60 & 35 & 10%

**Snaths—**

Scythe, 60 & 50 to 10%  
**Snips, Tinnings—See Shears.**

**Soldering Irons—**

See Irons, Soldering.  
**Spoke Trimmers—**

See Trimmers, Spoke.  
**Spoons and Forks—**

Silver Plated—  
 Good Quality, 60 & 10 to 60 & 10 & 5%  
 Cheap, 60 & 10 to 60 & 10 & 5%

International Silver Co., 40 & 10%  
 Rogers & Bros., and Rogers & Hamilton, 40 & 10%  
 Rogers & Bros., William Rogers Eagle Brand, 50 & 10%  
 Anchor, Rogers Brand, 60%  
 Wm. Rogers & Son, 60 & 10%  
 Simeon L. & Geo. H. Rogers Co., 60%  
 Silver Plated Flat Ware, 60%  
 No. 17 Silver Plated Ware, 60 & 10%

**Miscellaneous—**

German Silver, 60 & 10 to 60 & 10 & 10%  
 Cartaragus Cutlery Co., 30%  
 Yukon Silver, 30%  
 Simeon L. & Geo. H. Rogers Co., 30%  
 German or Nickel Silver, Special list 1 & 10%

**Tinned Iron—**

Teas, per gro. 45 to 50¢  
 Tables, per gro. 90 to \$1.00

**Spring—**

Door—  
 Gem (Coll), 20%  
 Star (Coll), 30%  
 Torrey's Rod, 39 in., \$1.10 to \$1.25  
 Victor (Coll), 50 & 10 to 10%

**Carriage, Wagon, & Co.**

14 in. and wider:  
 Black or 1/4 Bright, lb. 4.40  
 Bright, lb. 6.40  
 Painted Seat Springs:  
 1 1/2 x 26 and smaller, per pr. 4.50 to 5.50  
 1 1/2 x 28 and smaller, per pr. 5.00 to 6.10  
 1 1/2 x 30 and narrower, per pr. 7.00 to 8.00

**Cliff's Springs:**

Bolster, 40%  
 Seat, per pair, \$1.10 to \$1.25  
 Pole, per pair, 1/4 in. \$1.10 to \$1.25

**Sprinklers, Lawn—**

Enterprise Mfg. Co., 25 & 30%  
 Philadelphia No. 1, \$1.00; No. 2, \$1.25; No. 3, \$1.50

**Squares—**

Nickel plated, List Jan. 5, 1900  
 Steel and Iron, 75 & 10 to 75%  
 Rosewood Hdl. Try Square and T. Bevels, 60 & 10 to 10%

**Iron Hdl. Try Squares and T-Bevels.**

60 & 10 to 60 & 10 & 10%  
 Diston's Try Sq. and T-Bevels, 60 & 10%  
 Winterbottom's Try and Miter, 40 & 10 to 40 & 10 & 10%

**Squeezers—Lemon—**

Wood, Common, gro. No. 9, \$5.25  
 \$6.50; No. 1, \$6.50 to \$6.50.  
**Wood, Porcelain Lined:**

Cheap, doz. \$2.00 to \$2.75  
 Good Grade, doz. \$3.00 to \$3.50  
 Tinned Iron, doz. \$0.75 to \$1.25  
 Iron, Porcelain Lined, doz. \$3.00 to \$3.25  
 Jennings' Star, doz. \$1.85 to \$1.90

**Staples—**

Barbed Blind, lb. 60 & 1/2¢  
 Electricians', Association list, 80 & 10 to 10 & 10%  
 Fence Staples, same price as Barbed Wire. See Trade Report.  
 Poultry Netting, Staples, per lb., 34 & 5/16¢

Grand Crossing Tack Co.'s list, 80 & 10%  
**Steels, Butchers'—**

Dick's, 30%  
 Foster Bros., 30%  
 Hartzell Cutlery Co., 40 & 5%  
 C. & A. Hoffmann's, 40%

**Steelyards, 35 to 25 & 10%**  
**Stocks and Dies—**

Blacksmiths', 40 & 10 to 10%  
 Gardner Die Stocks No. 1, 50%  
 Green River, 40%  
 Lightning Screw Plate, 25%  
 Little Giant, 25%  
 Reece's New Screw Plates, 25 & 30%  
 Curtis Reversible Ratchet Die Stock, 35%

**Scythe Stones—**  
 Chicago Wheel & Mfg. Co., 30%  
 Gem Corundum, 10 inch, \$3.00 per gro., 12 inch, \$10.00  
 Pike Mfg. Co. 1901 list:

Black Diamond S. S., gr. \$12.00  
 Lamolite S. S., gr. \$11.00  
 White Mountain S. S., gr. \$9.00  
 Green Mountain S. S., gr. \$8.00  
 Extra Indian Pond S. S., gr. \$7.50  
 No. 1 Indian Pond S. S., gr. \$7.00  
 No. 2 Indian Pond S. S., gr. \$4.50  
 Leader Red End S. S., gr. \$4.50  
 Balance of 1901 list \$3.45

**Oil Stones, & Co.**  
 Chicago Wheel & Mfg. Co., 1901 list:

Gem Corundum Oil, Double Grit, 50%  
 Gem Corundum Aze, Single or Double Grit, 50%  
 Gem Corundum Slips, 50%  
 Gem Corundum Razor Hones, 50%  
 Pike Mfg. Co. 1901 list:

Arkansas Stone, No. 1, 3 to 5 in., \$2.34  
 Arkansas Stone, No. 1, 5 to 8 in., \$4.50  
 Ark. Slips No. 1, 4 to 8 in., \$4.00  
 Lily White Washita, 4 to 8 in., 60¢  
 Rosy Red Washita, 4 to 8 in., 50¢  
 Washita Stone, Extra, 4 to 8 in., 50¢  
 Washita Stone, No. 1, 4 to 8 in., 40¢  
 Washita Stone, No. 2, 4 to 8 in., 30¢  
 Lily White Slips, 90¢  
 Rosy Red Slips, 90¢  
 Washita Slips, Extra, 80¢  
 Washita Slips, No. 1, 70¢  
 India Oil Stones (entire list), 25%

Hindustan No. 1, Regular, 45 & 45 & 5%  
 Hindustan No. 1, Small, 45 & 10¢  
 Turkey Oil Stones, ex. 5 to 10 in., 30¢  
 Queer Creek Stones, 4 to 8 in., 30¢  
 Queer Creek Slips, 10¢  
 Sand Stone, 5¢  
 Belgian, German and Swazy Razor Hones, 40%  
 Natural Grit Carving Knife Hones, 40%  
 \$ doz. \$3.00  
 Quick Edge Pocket Knife Hones, 40%  
 Mounted Kitchen Sand Stone, \$2.10  
 \$ doz. \$1.50

**Tanite Mills:**  
 Emery Oil, \$ doz. \$5.00, 50 to 60%

**Stoners—Cherry—**  
 Enterprise, 25 & 30%

**Stops, Bench—**  
 Millers' Falls, 15 & 10%  
 Morrill's, \$ doz. No. 1, \$10.00, 50%  
 Morrill's, No. 2, \$12.50, 60%

**Stops, Window—**  
 Ives' Patent, 25 & 5%

**Stove Boards—**  
 See Boards, Stove.

**Stove Polish—See Polish, Stove.**

**Strainers, Pump—**  
 Diamond Joe Pump Strainers, per doz. 75¢

**Straps, Box—**  
 Carry's Universal, case lots, 20 & 10%

**Stretchers, Carpet—**  
 Cast Iron, Steel Points, doz. 55 & 65¢  
 Socket, doz. \$1.75

**Strops, Razor—**  
 Smith & Hemenway Co., 70%

**Stuffers, Sausage—**  
 Enterprise Mfg. Co., 25 & 25 & 7 1/2%  
 National Specialty Mfg. Co., list Jan. 1, '97, 30%

**Tacks Brads, & Co.—**  
 List Jan. 15, '92.

Carpet Tacks, American 20 & 25¢  
 American Cut Tacks, 30 & 30¢  
 Suedes Iron Tacks, 30 & 30¢  
 Suedes Upholsterers' Tacks, 80 & 10¢  
 Gimp Tacks, 80 & 10¢  
 Lace Tacks, 80 & 10¢  
 Trimmers' Tacks, 90 & 25¢  
 Looking Glass Tacks, 70 & 10¢  
 Bill Posters' and Railroad Tack, 90 & 10¢  
 Hungarian Nails, 80 & 15¢  
 Common and Patent Brads, 80 & 10¢  
 Trunk and Clout Nails, 80 & 5¢

NOTE.—The above prices are for straight weights. An extra 5% is given for Star Weights, and an extra 10% on Standard Weights.

**Miscellaneous—**  
 Double Point Tacks, 90 & 6 or 7 tens  
 Steel Wire Brads, R. & E. Mfg. Co.'s list, 50 & 10 to 60%

See also Nails, Wire.

**Tanks, Oil—**

Emerald, S. S. & Co., 30-gal. \$3.20  
 Emerald, S. S. & Co., 60-gal. \$4.00  
 Queen City S. S. & Co., 0-gal. \$3.50  
 Queen City S. S. & Co., 60-gal. \$4.25

**Tapes, Measuring—**  
 American Asses' Skin, 40 & 10 to 50%  
 Patent Leather, 25 & 30 & 5%  
 Steel, 40 & 10 to 50%  
 Chesterman's, 55 & 25 & 5%  
 Eddy's Steel, 40 & 40 & 5%  
 Eddy's Metallic, 33 1/2 & 33 1/2 & 5%  
 Keuffel & Esser Co., Steel and Metallic, Lower list, 1899, 33 1/2 & 33 1/2 & 5%  
 Lufkin's Steel, 33 1/2 & 33 1/2 & 5%  
 Lufkin's Metallic, 30 & 30 & 5%

**Teeth Harrow—**  
 Steel Harrow Teeth, plain or head-  
 ed, bas. per lb. \$1.40

**Thermometers—**  
 Tin Case, 80 & 10 to 30 & 10 & 5%  
**Ties, Bale—Steel.**

Single Loop, 75%  
 Other Styles, 70%

**Ties, Wall—**  
 Cleveland Wire Spring Co.:

Galv. st. el 5 3/8 x 8 1/4 in. # 1000, \$10.00  
 Galv. Steel 5 3/8 x 8 1/4 in. # 1000, \$11.00  
 Galv. Steel 5 3/8 x 1 1/4 in. # 000, \$12.00  
 Galv. Steel 5 3/8 x 1 1/4 in. # 1000, \$14.00

**Tinners' Shears, & Co.—**  
 See Shears, Tinnings, & Co.

**Tinware—**  
 Stamped, Japanned and Pleeced, sold very generally at net prices.

**Tire Benders, Upsetters, & Co.—See Benders and Upsetters, Tire.**

**Tobacco Cutters—**  
 See Cutters, Tobacco.

**Tools—Coopers'—**  
 L. & I. J. White, 20 & 20 & 5%

**Saw—**  
 Atkins' Cross Cut Saw Tools, 40%  
 Simonds' Improved, 33 1/2%  
 Simonds' Crescent, 35%

**Ship—**  
 L. & I. J. White, 25%

**Transom Lifters—**  
 See Lifters, Transom.

**Traps—Fly—**  
 Balloon, Globe or Acme, doz. \$1.15 to \$1.25; gro. \$10.50 to \$11.00  
 Harper, Champion or Paragon, doz. \$1.25 to \$1.40; gro. \$12.00 to \$13.50

**Game—**  
 Oneida Pattern, 75 & 10 & 5 to 80 & 5%  
 Newhouse, 45 & 45 & 5%  
 Hawley & Norton, 65 & 5 & 5 to 10%  
 Victor (Oneida Pattern), 75 & 75 & 5%  
 Star (Blake Pattern), 60 & 5 & 5 to 10%

**Mouse and Rat—**  
 Mouse, Wood, Choker, doz. holes, 8 1/2 & 9¢  
 Mouse, Round or Square Wire, doz. \$0.25 to \$1.00

**American Pattern French Rat and Mouse Traps—**  
 No. 1, Detroit Marty Pattern, \$ doz. \$4.50; in 1/2 gro. lots, \$ doz. \$4.00  
 No. 2, Detroit Marty Pattern, \$ doz. \$4.25; in 1/2 gro. lots, \$ doz. \$3.75  
 Detroit Marty Pattern Mouse, \$ doz. \$2.00; in 1/2 gro. lots, \$ doz. \$1.75  
 Diamond Joe Mouse Traps, per doz. 60¢  
 Diamond Joe Rat Traps, per doz. \$1.00  
 Marty French Rat and Mouse Traps (Genuine):

No. 1, Rat, Each \$1.19 1/4; \$ doz. \$12.00  
 No. 3, Rat, \$ doz. \$6.00; case of 50 \$2.25 doz.  
 No. 3 1/2, Rat, \$ doz. \$1.75; case of 75 \$4.25 doz.  
 No. 4, Mouse, \$ doz. \$3.50; case of 75 \$4.75 doz.  
 No. 5, Mouse, \$ doz. \$2.75; case of 150 \$3.25  
 Schuyler's Rat Killer, No. 1, \$ gr. \$30.00; Mouse, No. 3, \$18.00

**Target—**  
 Markle's, each, \$5.50

**Trimmers, Spoke—**  
 Bonney's Nos. 1 and 2, 40%

**Trowels—**  
 Diston Brick and Pointing, 80%  
 Diston Plastering, 25%  
 Diston "Standard Brand" and Garden Trowels, 40%  
 Never-Break Steel Garden Trowels, gro. \$7.00

Peace's Plastering, 30%  
 Rose Brick and Plastering, 25 & 5%  
 Woodrough & McFarlin, Plastering, 25%

**Trucks, Warehouse, & Co.—**  
 B. & L. Block Co.'s list, 50%  
 Daisy Stove Trucks, Improved pattern \$ doz. \$18.50  
 Model Stove Trucks, \$ doz. \$18.50

**Tubs, Wash—**  
 No. 1 2 3  
 Galvanized, per doz. \$5.00 5.50 6.00  
 Galvanized Wash Tubs (S. S. & Co.), No. 1 2 3 10 20 30  
 Per doz. \$5.25 6.00 6.75 6.50 7.25 7.00

**Twine—**  
**Miscellaneous—**  
 No. 9, 1/4 and 1/2-lb. Balls, 20¢ 24¢  
 No. 12, 1/4 and 1/2-lb. balls, 13¢ 20¢  
 No. 18, 1/4 and 1/2-lb. Balls, 16¢ 18¢  
 No. 24, 1/4 and 1/2-lb. Balls 15 1/2¢ 17 1/2¢  
 No. 36, 1/4 and 1/2-lb. Balls, 15¢ 17¢

Chalk Line, Cotton, 1/4-lb. Balls, 22¢ 24 1/2¢

Cotton Mops, 6, 9, 12 and 15 lb. to doz., 70¢ 75¢

Cotton Wrapping, 5 Balls to lb. according to quality, 10¢ 10 1/2¢

American 3-Ply Hemp, 1/4 and 1/2-lb. Balls, 15¢ 11¢

American 3-Ply Hemp, 1-lb. Balls, 15¢ 11¢

India 2-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine), 8¢

India 3-Ply Hemp, 1-lb. Balls, 7¢

India 3-Ply Hemp, 1 1/2-lb. Balls, 7¢

2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls, 9¢ 10¢

Mason Line, Linen, 1/4-lb. Balls, 15¢

No. 26 Mattress, 1/4 and 1/2-lb. Balls, 7¢

Wool, 3 to 6 ply, 15¢ 10¢

**Vises—**  
 Solid Box, 60 & 50 & 10%

**Parallel—**  
 Athol Machine Co.:

Simpson's Adjustable, 40¢

Standard, 30¢

Amateur, 25¢

Bonney's, 40%

Columbian Hdw. Co., 40%

Fisher & Norris Double Screw, 15 & 10%

Holland's:

Machinists', 40%

Keystone, 65 & 5¢

Lewis Tool Co., 20 & 30%

Massey's Perfect, 15 & 20%

Massey's:

Cloncher, 80 & 40%

Combination Quick Adj., 40 & 45%

Woodworker's, 15 & 20%

Merrill's, 20%

Miller's Falls, 50 & 10 & 10%

Parker's:

Victor, 30 & 25%

Regulars, 20 & 25%

Vulcan, 40 & 45%

Combination Pipe, 55 & 60%

Prentiss, 20 & 25%

Sargent's, 40%

Snediker's X, L., 20 & 25%



## PAINTS, OILS AND COLORS—Wholesale Prices.

Remittances should be made by draft, payable to the order of: DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received.

Newspapers or Booksellers in any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.: The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-class Matter.

# CURRENT METAL PRICES.

FEBRUARY 19, 1902.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—	
Bar Iron from Store—	
Refined Iron:	
1 to 1 1/4 in. round and square.....	1.05@2.05
1 1/4 to 4 in. x 1/4 to 1 in.....	2.05@2.15
1 1/4 to 4 in. x 1/4 to 5-16 in.....	2.05@2.15
Rods—5/8 and 1-1/2 round and square.....	2.05@2.35
Angles:	
3 in x 1/2 in. and larger.....	2.50
8 to 9 1/2 in. x 3-16 in.....	2.50
1 1/4 to 3 in. x 1/4 in.....	2.50
1 1/4 to 2 1/2 in. x 3-16 in and thicker.....	2.20@2.30
1 to 1 1/4 in. x 3-16 in.....	2.30@2.40
1 to 1 1/4 x 3/4 in.....	2.40@2.50
1 1/4 x 1/2 in.....	2.70
1 1/4 x 1/2 in.....	2.85
1 1/4 x 1/2 in.....	3.50
1 1/4 x 3/8 in.....	4.00
Tees:	
1 in.....	2.40
1 1/4 in.....	2.60
1 1/2 in. and larger.....	2.50@3.00
Beams.....	2.50@3.00
Channels, 8 in. and larger.....	2.50@3.00
Bands—1 1/4 to 6 x 3-16 to No. 8.....	2.30
Burden's Best Iron, base price.....	3.15
Burden's "H. B. & S. Iron, base price.....	2.95
"Uster".....	3.60
Norway Bars.....	3.75@4.25
Norway Shapes.....	4.00@4.50

Merchant Steel from Store—	
Bessemer Machinery.....	1.90 to 1.95
For Calk, Tire and Sleigh Shoe.....	2.00@2.50
Best Cast Steel, base price in small lots.....	7 1/2
Best Cast Steel Machinery, base price in small lots.....	6

Soft Steel Sheets—	
1/4 inch.....	2.30
5-16 inch.....	2.30
No. 6.....	2.40
No. 10.....	2.60
No. 12.....	2.90
No. 14.....	3.00
No. 16.....	3.20
No. 18.....	3.40
No. 20.....	3.70
No. 22.....	3.90

Sheet Iron from Store.	
Black.	
One Pass, C. R.	R. G.
Soft Steel.	Cleaned.
No. 14 to 16.....	3.40
No. 18 to 21.....	3.70
No. 22 to 24.....	3.75
No. 25 and 26.....	3.90
No. 27.....	4.00
No. 28.....	4.10

Russia, Planished, &c.	
Genuine Russia, according to assortment.....	11@14
Patent Planished.....	12@14
Galvanized.	
No. 10 to 16.....	12@14
No. 17 to 21.....	13@15
No. 22 to 24.....	14@16
No. 25 to 28.....	15@17
No. 27.....	16@18
No. 28.....	17@19
No. 29.....	18@20
No. 30.....	19@21

Foreign Steel from Store—	
Best Cast.....	15
Extra Cast.....	18
Swaged Cast.....	18
Best Double Shear.....	18
Blister, 1st quality.....	18
German Steel, Best.....	10
2d quality.....	9
3d quality.....	8
Sheet Cast Steel, 1st quality.....	15
2d quality.....	14
3d quality.....	12
R. Muesel's "Special".....	40
"Titanic".....	75
Hobson's Choice XX Extra Best.....	85
Jessop Self Hardening.....	45
Seamless "Nelson" Steel.....	45
Hobson's "Soho" Special Self-Hardening.....	43

METALS—	
Tin—	
Duty.—Pigs, Bars and Block. Free.	Per lb.
Bands, Pigs.....	24@25
Straits, Pigs.....	24@25
Straits in Bars.....	25@26
Tin Plates—	
American Charcoal Plates.	
Oakland Grade:	
IC, 14 x 20.....	7.35
IX, 14 x 20.....	8.75
Melvin Grade:	
IC, 14 x 20.....	6.75
IX, 14 x 20.....	8.25
Alway Grade:	
IC, 14 x 20.....	6.35
IX, 14 x 20.....	7.35
American Coke Plates—Bessemer—	
IC, 14 x 20.....	108
IX, 14 x 20.....	108.25
American Terne Plates—	
IC, 20 x 25.....	10.00
IX, 20 x 25.....	12.00

Tin Boiler Plates, American—	
XX, 14 x 20.....	112 sheets.....
XX, 14 x 20.....	112 sheets.....
XX, 14 x 21.....	112 sheets.....

Copper—	
Duty: Pig, Bar and Ingot and Old Copper free	
Manufactured, 2 1/2¢ lb.	
Ingot—	
Lake.....	12¢ 1/2
Casting.....	12¢ 1/2

Sheet and Bolt—	
January 2, 1902.	
Prices, in cents per pound.	
Sheet 30 x 60.	
Not wider than	Not longer than
Ins.	Ins.
30	72
36	96
48	120
60	144
72	168
84	192
96	216
108	240
120	264
132	288
144	312
156	336
168	360
180	384
192	408
204	432
216	456
228	480
240	504
252	528
264	552
276	576
288	600
300	624
312	648
324	672
336	696
348	720
360	744
372	768
384	792
396	816
408	840
420	864
432	888
444	912
456	936
468	960
480	984
492	1008
504	1032
516	1056
528	1080
540	1104
552	1128
564	1152
576	1176
588	1200
600	1224
612	1248
624	1272
636	1296
648	1320
660	1344
672	1368
684	1392
696	1416
708	1440
720	1464
732	1488
744	1512
756	1536
768	1560
780	1584
792	1608
804	1632
816	1656
828	1680
840	1704
852	1728
864	1752
876	1776
888	1800
900	1824
912	1848
924	1872
936	1896
948	1920
960	1944
972	1968
984	1992
996	2016
1008	2040
1020	2064
1032	2088
1044	2112
1056	2136
1068	2160
1080	2184
1092	2208
1104	2232
1116	2256
1128	2280
1140	2304
1152	2328
1164	2352
1176	2376
1188	2400
1200	2424
1212	2448
1224	2472
1236	2496
1248	2520
1260	2544
1272	2568
1284	2592
1296	2616
1308	2640
1320	2664
1332	2688
1344	2712
1356	2736
1368	2760
1380	2784
1392	2808
1404	2832
1416	2856
1428	2880
1440	2904
1452	2928
1464	2952
1476	2976
1488	3000
1500	3024
1512	3048
1524	3072
1536	3096
1548	3120
1560	3144
1572	3168
1584	3192
1596	3216
1608	3240
1620	3264
1632	3288
1644	3312
1656	3336
1668	3360
1680	3384
1692	3408
1704	3432
1716	3456
1728	3480
1740	3504
1752	3528
1764	3552
1776	3576
1788	3600
1800	3624
1812	3648
1824	3672
1836	3696
1848	3720
1860	3744
1872	3768
1884	3792
1896	3816
1908	3840
1920	3864
1932	3888
1944	3912
1956	3936
1968	3960
1980	3984
1992	4008
2004	4032
2016	4056
2028	4080
2040	4104
2052	4128
2064	4152
2076	4176
2088	4200
2100	4224
2112	4248
2124	4272
2136	4296
2148	4320
2160	4344
2172	4368
2184	4392
2196	4416
2208	4440
2220	4464
2232	4488
2244	4512
2256	4536
2268	4560
2280	4584
2292	4608
2304	4632
2316	4656
2328	4680
2340	4704
2352	4728
2364	4752
2376	4776
2388	4800
2400	4824
2412	4848
2424	4872
2436	4896
2448	4920
2460	4944
2472	4968
2484	4992
2496	5016
2508	5040
2520	5064
2532	5088
2544	5112
2556	5136
2568	5160
2580	5184
2592	5208
2604	5232
2616	5256
2628	5280
2640	5304
2652	5328
2664	5352
2676	5376
2688	5400
2700	5424
2712	5448
2724	5472
2736	5496
2748	5520
2760	5544
2772	5568
2784	5592
2796	5616
2808	5640
2820	5664
2832	5688
2844	5712
2856	5736
2868	5760
2880	5784
2892	5808
2904	5832
2916	5856
2928	5880
2940	5904
2952	5928
2964	5952
2976	5976
2988	6000
3000	6024
3012	6048
3024	6072
3036	6096
3048	6120
3060	6144
3072	6168
3084	6192
3096	6216
3108	6240
3120	6264
3132	6288
3144	6312
3156	6336
3168	6360
3180	6384
3192	6408
3204	6432
3216	6456
3228	6480
3240	6504
3252	6528
3264	6552
3276	6576
3288	6600
3300	6624
3312	6648
3324	6672
3336	6696
3348	6720
3360	6744
3372	6768
3384	6792
3396	6816
3408	6840
3420	6864
3432	6888
3444	6912
3456	6936
3468	6960
3480	6984
3492	7008
3504	7032
3516	7056
3528	7080
3540	7104
3552	7128
3564	7152
3576	7176
3588	7200
3600	7224
3612	7248
3624	7272
3636	7296
3648	7320
3660	7344
3672	7368
3684	7392
3696	7416
3708	7440
3720	7464
3732	7488
3744	7512
3756	7536
3768	7560
3780	7584
3792	7608
3804	7632
3816	7656
3828	7680
3840	7704
3852	7728
3864	7752
3876	7776
3888	7800
3900	7824
3912	7848
3924	7872
3936	7896
3948	7920
3960	7944
3972	7968
3984	7992
3996	8016
4008	8040
4020	8064
4032	8088
4044	8112
4056	8136
4068	8160
4080	8184
4092	8208
4104	8232
4116	8256
4128	8280
4140	8304